Livingstone Shire
Local Disaster
Management Plan

PREPARING OUR COMMUNITY

Livingstone
SHIRE COUNCIL

FOREWORD

Foreword by the Chair, Adam Belot of the Livingstone Shire Local Disaster Management Group.

The Livingstone Shire Local Disaster Management Plan (LDMP) has been prepared to ensure there is a consistent approach to disaster management in the Livingstone Shire. This plan is an important tool for managing potential disasters and is a demonstrated commitment towards enhancing the safety of the Livingstone Shire community.

The LDMP identifies potential hazards and risks in the area, steps to mitigate these risks and includes strategies to enact should a hazard impact and cause a disaster.

This LDMP has been developed to be consistent with the Disaster Management Standards and Guidelines and importantly to integrate into the Queensland Disaster Management Arrangements (QDMA). The primary focus is to reduce the potential adverse effect of an event by conducting activities before, during or after to reduce loss of human life, illness or injury to humans, property loss or damage, or damage to the environment.

I am confident the LDMP provides a comprehensive framework for our community. Residents and visitors to our Shire can feel secure that agencies listed in the Livingstone Shire LDMP are dedicated to the shared responsibility of disaster management.

On behalf of the Livingstone Shire Local Disaster Management Group, I would like to thank you for taking the time to read this important plan.

Livingstone Shire Council Mayor Adam Belot
Chair, Local Disaster Management Group

Dated: 24/07/2024

ENDORSEMENT

This Local Disaster Management Plan (LDMP) has been prepared by the Livingstone Shire Local Disaster Management Group for the Livingstone Shire Council as required under section 57 of the *Disaster Management Act 2003* (the Act).

Karen Sandy
Local Disaster Coordinator
Livingstone Shire Council

Dated: 16 July 2024

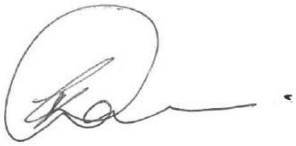
Adam Belot
Chair
Livingstone Shire
Local Disaster Management Group

Dated: 24/07/2024

Endorsed by the Livingstone Shire Council:

Adam Belot
Mayor
Livingstone Shire Council

Dated: 24/07/2024



Alastair Dawson
Acting Chief Executive Officer
Livingstone Shire Council

Dated: 24/07/2024

PART 1. DOCUMENT CONTROL

The Local Disaster Management Plan (LDMP) is a controlled document. The controller of the document is the Livingstone Shire Council Local Disaster Coordinator (LDC). Any proposed amendments to this LDMP should be forwarded in writing to:

Karen Sandy
Local Disaster Coordinator
Livingstone Shire Council
PO Box 2292
YEPPOON QLD 4703

This document is not to be altered, amended or changed in any way other than those amendments authorised by the Livingstone Shire Local Disaster Management Group (LDMG). However, the LDMP is intended to be a "live" document to be regularly reviewed, assessed and amended where necessary. As such, Livingstone Shire Council (LSC) welcomes feedback from the region's residents, visitors and others regarding this plan.

A copy of each amendment is to be forwarded to those identified in the distribution list. On receipt, the amendment is to be inserted into the document and the Amendment Register updated.

1.1 Amendment Register

Version		Comments	Plan Updated	
No/Ref	Issue Date		Amended by	Date
2		Minor review based on planning workshop conducted in March 2017. Review for IGEM Assurance Framework and lessons learnt from Fitzroy River Flood and Tropical Cyclone Debbie.	David Mazzaferri	25 July 2017
3		In-depth review based on updated census data conducted in March 2018.	Melissa Minter on behalf of David Mazzaferri	10 April 2018
4		LDMG member review – LSC, CQHHS, SLSQ, NBN, Dept. of Education, QFES & Red Cross.	David Mazzaferri	08 August 2018
5		LDMG member review – LSC, CQHHS, DCDSS, MSQ, SLSQ and CHRS.	David Mazzaferri	22 August 2019
6		LDMG member review – LSC, SLSQ, Red Cross, QFES and DAF	David Mazzaferri	30 July 2020
7		LDMG member review – LSC, DAF, ADF, Red Cross, DCHDE, SLSQ, QPS, QFES, AVCGA, SES, DES	David Mazzaferri	25 August 2021
8		In-depth review based on 'Multi Hazard Risk Assessment' and '	Disaster Management	31 August 2022

		Our Living Coast Livingstone Coastal Hazards Adaptation Strategy'. Updated terminology and definitions from the AIDR Glossary and the IGEM Lexicon Update of codes, plans and legislation referenced	and Resilience Unit on behalf of Greg Abbotts (LDC)	
9		LDMG member review – 31 August 2022 – LSC LDMG Endorsed	Disaster Management and Resilience Unit on behalf of Greg Abbotts (LDC)	31 August 2022
10		Livingstone Shire Council adopted at Council meeting.		15 November 2022
11		Incorporated 2021 census data, Updated LDMG members and included 2021/22 Queensland State Disaster Risk Report.	Disaster Management and Resilience Unit on behalf of Greg Abbotts (LDC)	7 June 2023
12		Review included updates to Government department names, LDC and Deputy LDC, Chair and Deputy Chair, Agency capabilities, 2023 State Disaster Risk Report Hazard descriptions and the MSQ Extreme weather event contingency plan warning levels.	Disaster Management Unit on behalf of Karen Sandy (LDC)	15 May 2024
13		LDMG Member Review – LSC, QPS, EMC, CQHHS, QAS. LDMG endorsed.	Disaster Management Unit on behalf of Karen Sandy (LDC)	12 June 2024

1.2 Distribution

This LDMP will be distributed to the representatives of nominated agencies as detailed in *Annexure A – LDMG Core Membership Contact List*. There will be two versions of this plan, one will contain all contact details and other sensitive information for members of the LDMG, with the second version having the personal details removed ensuring it complies with the *Information Privacy Act 2009.* Core members of the LDMG will receive a controlled copy of the entire version and the modified version will be provided to advisory members. A copy of the modified version will be available on the public website for the community to access.

PART 2. ADMINISTRATION AND GOVERNANCE

2.1 Authority to Plan

This plan has been prepared by the Livingstone Shire Local Disaster Management Group (LDMG) for the Livingstone Shire Council under the provisions of section 57(1) of the *Disaster Management Act 2003.*

2.2 Purpose

This plan details the arrangements within the Livingstone Shire area to plan and coordinate capability in disaster management and disaster operations, and to minimise adverse impacts that threaten the safety of our community prior to, during and after a disaster by adopting a comprehensive and all agency shared responsibility approach.

In short, this disaster management plan adopts a comprehensive all agencies approach to disaster management.

The LDMG will review and update the community's disaster management arrangements outlined in this plan and will investigate new initiatives to meet the changing needs of the area.

PART 3. THE DISASTER MANAGEMENT SYSTEM IN QUEENSLAND

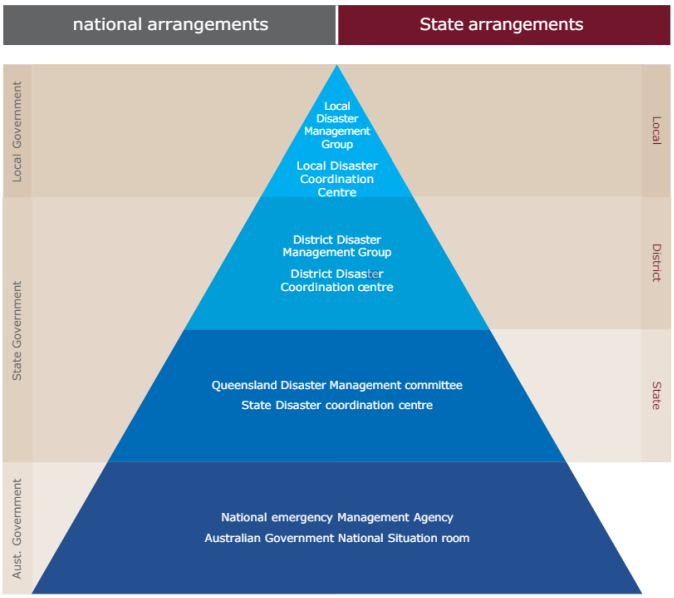
Queensland's disaster management arrangements are guided by:

1. The *Disaster Management Act 2003;*
2. The *Disaster Management Regulation 2014;*
3. The Queensland Disaster Management 2016 Strategic Policy Statement;
4. The Standard for Disaster Management in Queensland 2021;
5. The Queensland State Disaster Management Plan; and
6. The Queensland Strategy for Disaster Resilience 2022 - 2027.

The Queensland Government remains focused on harnessing agency capabilities through informed partnerships with local government, communities and individuals. The overall aim is to continue to build Queensland's resilience against hazards.

Australia has a sophisticated network for disaster management with clear responsibilities and collaborative plans for national, state and local government, together with local business, key non-government stakeholders and the broader community. The various planning, implementation, monitoring and evaluation tools assist in the ongoing safety of residents and visitors.

3.1 Queensland Disaster Management Arrangements



3.2 Objectives

The objective of the LDMP is to ensure that a coordinated and effective system for disaster management exists for the Livingstone Shire. It describes the roles and responsibilities of stakeholders to support the LDMG. Specific strategies relating to the prevention, preparedness, response and recovery from a disaster are detailed throughout the LDMP.

Prevention

- Increase adherence to and introduction of systems and regulations that reduce disaster risks; and
- Investigate and implement (where appropriate) strategies/initiatives to eliminate or reduce the impact of the effects of hazards on the community through the use of the emergency risk management process.

Preparedness

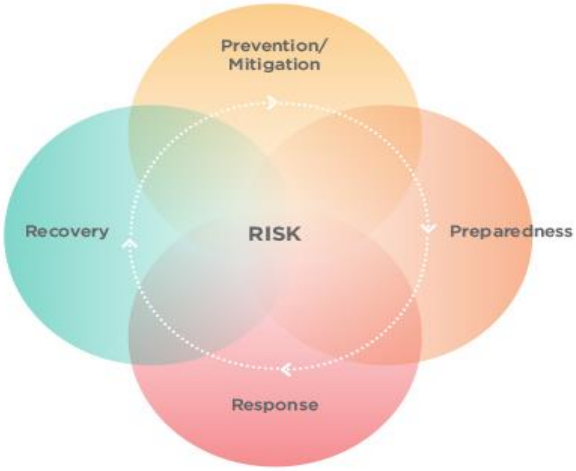
- Increase community safety through public awareness, information and education;
- Encourage an all agencies, all hazards ethos through the workings of the LDMG;
- Identify resources to maximise response;
- Develop contingency plans to address response and recovery issues; and
- Establish and maintain working relationships with other agencies to increase disaster management capability.

Response

- Efficiently and effectively coordinate the response to an event in conjunction with other emergency response agencies (commitment to an all agencies approach); and
- Minimise the impact on the community from a disaster event.

Recovery

- Ensure the recovery priorities of the community are met in collaboration with other member agencies of the Livingstone Shire Recovery and Resilience Taskforces, Queensland Reconstruction Authority and the State Recovery Coordinator; and
- Recovery should include a focus of continuous improvement based on identified learnings from previous events and on resilience building for the Livingstone Shire.



The four objectives and framework are designed to work in unison and manage risks associated with community safety. Application of the framework is the shared responsibility of the community, local businesses and government.

3.3 Strategic Policy Statement

Disaster management and operations in the Livingstone Shire are consistent with the *Disaster Management 2016 Strategic Policy Statement.* This is achieved by:

1. Ensuring a comprehensive, all hazards, all agency approach by achieving the right balance of prevention, preparedness, response and recovery;
2. Supporting the mainstreaming of disaster preparedness and mitigation into relevant areas of activity of government, non-government, small business and corporations;
3. Aligning disaster risk reduction, disaster mitigation, disaster resilience and climate change adaptation policy and actions with international and national reforms;
4. Promoting a transparent, systematic and consistent approach to disaster risk assessment and management, based on the Australian Standard AS ISO 31000:2018 Risk Management – Guidelines;
5. Recognising the commitment of stakeholders and the need for collaboration across all levels of government, community, industry, commerce, government owned corporations, private and volunteer organisations, and local communities in all aspects of disaster management;
6. Emphasising building and maintaining sincere relationships, trust, teamwork, consultative decision making and shared responsibilities among stakeholders;
7. Promoting community resilience and economic sustainability through disaster risk reduction.

https://www.qld.gov.au/__data/assets/pdf_file/0019/347401/Strategic-Policy-Statement.pdf

3.4 Disaster Management Priorities

The priorities for the LDMG are to:

1. Develop and maintain a LDMG membership who are appropriately qualified, and able to contribute to meeting the functions of the LDMG
2. Develop and maintain an effective recovery and resilience framework to build resilience in all environments
3. Review and implement local sub committees to meet identified hazards
4. Write, review and exercise local plans to ensure effective disaster management
5. Develop and maintain effective local community communication strategies
6. Evaluate the relevance of, and where necessary implement State recommendations including Inspector General Emergency Management (IGEM), and Commission of Inquiry recommendations
7. Identify resilience activities that will help safeguard Livingstone Shire for long term wellbeing (Queensland Strategy for Disaster Resilience 2017).

3.5 Review and Renew Plan

This LDMP is to be reviewed at least a year as per section 59 of the Act. The review is to examine the effectiveness of the LDMP based on activation, exercise or recommendations from interested parties. Reviews are to be conducted by the District Disaster Management Group (DDMG), IGEM and LDMG.

When a review identifies a need to amend the LDMP such amendments are to be developed by the LDMG and submitted to the Livingstone Shire Council for adoption as soon as possible after the need for amendment has been identified.

The Livingstone Shire LDMG, LDC is to ensure that the contact lists are checked for accuracy and updated appropriately each six months.

3.6 Emergency Management Assurance Framework

The Emergency Management Assurance Framework (EMAF) is a commitment by Queensland's disaster management stakeholders to position Queensland as the most disaster resilient state in Australia. The framework supports accountability and builds consistency across all levels of the disaster management arrangements and reinforces a shared responsibility for delivering better disaster management outcomes for the community. The framework is comprised of four main sections:

- Principles;
- Good practice attributes;
- Disaster management standards; and
- Assurance activities.

3.7 Inspector-General Emergency Management (IGEM)

The role of Inspector-General Emergency Management (IGEM) was first established in 2013 following a review of police and community safety. The IGEM role was formalised as a statutory position in 2014. The functions of the IGEM and the Office of the IGEM are prescribed in part 1A of the Act.

The vision of IGEM is to be a catalyst for excellence in emergency management to enable confidence in Queensland's emergency management arrangements. IGEM is responsible for providing the Premier, Government and people of Queensland an assurance of public safety, through the establishment and implementation of an assurance framework. This framework will direct, guide and focus work of all agencies, across all tiers of Government to the desired outcomes of the disaster and emergency management arrangements for Queensland.

Key accountabilities for the Office of the IGEM include:

1. Reviewing and assessing the effectiveness of disaster management arrangements within Queensland
2. Reviewing and assessing cooperation between entities responsible for disaster management in the State, including whether disaster management systems and procedures employed by those entities are compatible and consistent
3. Establishing standards for disaster management, reviewing and assessing performance against these standards and regularly reviewing the standards
4. Monitoring compliance by Queensland government departments with their disaster management responsibilities
5. Identifying and improving disaster and emergency management capabilities, including volunteer capabilities and opportunities for cooperative partnerships
6. Reporting to and advising the Minister of Police, Fire and Emergency Services about issues relating to these function

3.8 Queensland Reconstruction Authority

In response to the disaster events, the Queensland Government established the Queensland Reconstruction Authority (QRA) under the *Queensland Reconstruction Act 2011*. The QRA's role was later expanded to include the administration of prior and subsequent events and it was made a permanent part of the Queensland Government in June 2015. The QRA's vision is to build a more disaster resilient Queensland.

The QRA manages and coordinates the Government's programme of infrastructure renewal and recovery within disaster affected communities. The QRA focuses on working with state and local government partners to deliver best practice administration of public reconstruction and resilience funds. The QRA is the state's lead agency responsible for disaster recovery, resilience and mitigation policy.

https://www.qra.qld.gov.au

3.9 National Emergency Management Agency

The National Emergency Management Agency (NEMA) is Australia's National Disaster Management Organisation. NEMA manages the Australian Government Disaster Response Plan under which states and territories may seek Australian Government assistance when the scale of an emergency or disaster exceeds or exhausts the jurisdiction's response capacity and capabilities, or where resources cannot be mobilised in sufficient time. NEMA delivers programs, policies and services that strengthen Australia's national security and emergency management capabilities.

https://nema.gov.au

3.10 Acronyms and Abbreviations

ABC	Australian Broadcasting Corporation
ADF	Australian Defence Force
AEMI	Australian Emergency Management Institute
AIIMS	Australian Inter-service Incident Management System
AHD	Australian Height Datum
ARI	Average Recurrence Interval
BoM	Bureau of Meteorology
CALD	Culturally and Linguistically Diverse Community Organisations
CQARA	Central Queensland Amateur Radio Association
CEO	Chief Executive Officer of Livingstone Shire Council
DACC	Defence Aid to Civil Community
DTASTIPCA	Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts
DDC	District Disaster Coordinator
DDCC	District Disaster Coordination Centre
DDMG	District Disaster Management Group
DDMP	District Disaster Management Plan
DESI	Department of Environment, Science and Innovation
DM	Disaster Management
DMG	Disaster Management Group
DNRME	Department of Resources, Mines and Energy
DRFA	Disaster Recovery Funding Arrangements
DTMR	Department Transport and Main Roads
EMAF	Emergency Management Assurance Framework
HAT	Highest Astronomical Tide
ICC	Incident Coordination Centre
IGEM	Inspector General Emergency Management
IMT	Incident Management Team

GIS	Geographical Information System
Guardian IMS	Guardian Incident Management System for the coordination of an event at Livingstone Shire Council
LDC	Local Disaster Coordinator
LDCC	Local Disaster Coordination Centre
LDMG	Local Disaster Management Group
LDMP	Local Disaster Management Plan
LRC	Local Recovery Coordinator
LRG	Local Recovery Group
LSC	Livingstone Shire Council
MSQ	Maritime Safety Queensland
NEMA	National Emergency Management Agency
NERAG	National Emergency Risk Assessment Guidelines
PPRR	Prevention, Preparedness, Response and Recovery
PSPA	*Public Safety Preservation Act 1986*
QAS	Queensland Ambulance Service
QERMF	Queensland Emergency Risk Management Framework
QDMA	Queensland Disaster Management Arrangements
QDMC	Queensland Disaster Management Committee
QDRR	Queensland Disaster Relief and Recovery
QFD	Queensland Fire Department
QPS	Queensland Police Service
DAF	Department of Agriculture and Fisheries
QR	Queensland Rail
QRA	Queensland Reconstruction Authority
RFB	Rural Fire Brigade
RSPCA	Royal Society for the Prevention of Cruelty to Animals
SDCC	State Disaster Coordination Centre
SDMP	State Disaster Management Plan
SDRA	State Disaster Relief Arrangements

SES	State Emergency Service
SEWS	Standard Emergency Warning System
SLSQ	Surf Life Saving Queensland
SOP	Standard Operating Procedure
TC	Tropical Cyclone
The Act	*Disaster Management Act 2003*
The Regulation	*Disaster Management Regulation 2014*
YPCS	Yeppoon Public Cyclone Shelter

3.11 Definitions and Glossary of Terms

AHD	The Australian Height Datum is a geodetic datum for altitude measurement in Australia.
All Hazards Approach	Dealing with all types of emergencies or disasters and civil defence using the same set of management arrangements. (Australian Disaster Resilience Glossary)
All Agencies Approach	Arrangements for dealing with emergencies and disasters involving an active partnership between Commonwealth, State and Territory, and local levels of government, statutory authorities, and voluntary and community organisations. (Australian Disaster Resilience Glossary)
Community	A social group with a commonality of association and generally defined by location, shared experience or function, and with a number of things in common such as culture, heritage, language, ethnicity, pastimes, occupation or workplace. (Australian Disaster Resilience Glossary,)
Consequence	The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage, or gain. (Australian Disaster Resilience Glossary,)
Coordination	Coordination refers to the bringing together of organisations to ensure effective disaster management before, during and after an event. It is primarily concerned with the systematic acquisition and application of resources (people, material, equipment etc.) in accordance with priorities

	set by Disaster Management Groups. Coordination operates horizontally across organisations and agencies.
Coordination Centre	A centre established as a centre of communication and coordination during disaster operations.
Council	In this plan Council means the Livingstone Shire Council.
Declaration of Disaster Situation	A District Disaster Coordinator for a Disaster District may, with the approval of the Minister, declare a Disaster Situation for the District or part of it, if satisfied of a number of conditions as set out in Part 4 – section 64 Declaration - Provisions for Declarations of a Disaster Situation. (*Disaster Management Act 2003*) The formal procedure to enable declared disaster powers under the Act as required. Specific powers may be used to prevent or minimise loss of life, injury or damage. The term is distinct from a 'declaration of an emergency situation' as defined in the *Public Safety Preservation Act 1986* (Adapted from Queensland Disaster Management Lexicon, 2017)
Disaster	A serious disruption in a community, caused by the impact of an event, that requires a significant coordinated response by the State and other entities to help the community recover from the disruption. (s13(1) *Disaster Management Act 2003*)
Disaster Management	Arrangements to manage the potential adverse effects of an event, including, for example, arrangements for mitigating, preventing, preparing for, responding to and recovering from a disaster. (s14 *Disaster Management Act 2003*).
Disaster Management Act 2003	Queensland Government legislation to provide for matters relating to disaster management in the State, and for other purposes.
Disaster Management (DM) Portal	The Queensland Disaster Management Portal provides a mechanism to allow the sharing of information on disaster management and is an information service for the disaster management community.
Disaster Management Regulation 2014	Enhance the efficiency of disaster management governance by allowing membership, meeting requirements and appointments of chairpersons of these groups to be described by regulation known as the *Disaster Management Regulation 2014* (Regulation).
Disaster Operations	Activities undertaken before, during or after an event happens to help reduce loss of human life, illness or injury to humans, property loss or damage, or damage to the environment, including, for example, activities to mitigate the adverse effects of the event. *(S*15 *Disaster Management Act 2003)*
Disaster Recovery Funding Arrangements (DRFA)	Joint Commonwealth and State government arrangements that provide a diverse range of funding relief measures following an eligible disaster (effective 1 November 2018)

Disaster Response Capability (Local Government)	The ability to provide equipment and a suitable number of persons, using the resources available to the local government, to effectively deal with, or help another entity to deal with, an emergency situation or a disaster in the local government's area. (s80(2) *Disaster Management Act 2003*)
District Disaster Coordinator - (DDC)	The chairperson of a district group is also the district disaster coordinator of the district group. The function of the district disaster coordinator is to coordinate disaster operations in the disaster district for the group. (s26 *Disaster Management Act 2003)*
Emergency Management Assurance Framework	Developed by the Office of the Inspector-General Emergency Management in accordance with section 16C *Disaster Management Act* 2003 to provide the foundation for guiding and supporting the continuous improvement of entities disaster management programmes. It also provides the structure and mechanism for reviewing and assessing the effectiveness of Queensland's disaster management arrangements.
Emergency Situation	Under section 5 *Public Safety Preservation Act 1986*, if at any time a commissioned officer of the Queensland Police Service (the emergency commander) is satisfied on reasonable grounds that an emergency situation has arisen or is likely to arise, the commissioned officer may declare that an emergency situation exists in respect of an area specified by the commissioned officer.
Evacuation Centre	A building located beyond a hazard to provide temporary accommodation, food and water until it is safe for evacuees to return to their homes or alternative temporary emergency accommodation. (Queensland Prevention, Preparedness, Response and Recovery Disaster Management Guideline, 2018)
Event	An event means any of the following: a) A cyclone, earthquake, flood, storm, storm tide, tornado, tsunami, volcanic eruption or other natural happening; b) Bushfire, an explosion or fire, a chemical, fuel or oil spill, or a gas leak; c) An infestation, plague, or epidemic; d) An attack against the State; or e) Another event similar to the above events. An event may be natural or caused by human acts or omissions (s16 (1) and (2) *Disaster Management Act 2003*).
Exercise	A controlled, objective-driven activity used for testing, practising or evaluating processes or capabilities. **Field Exercise -** An exercise that involves the deployment of Personnel to a simulated incident or emergency. **Functional Exercise** - is designed to test or practise individual functions such as command, planning or intelligence. In a functional exercise, participants undertake the functions or tasks they would perform as part of the role(s) they are playing in the exercise. Functional exercises normally take place in a simulated operational environment (e.g., control centre or command post), are usually conducted in real time, and

	scenario information is fed to the participants in a manner similar to the way they would receive it 'in the real world'. Australian Disaster Resilience Handbook 3: Managing Exercises, 2012
Flooding	**Flash flood** - Flash floods occur when soil absorption, runoff or drainage cannot adequately disperse intense rainfall. The most frequent cause of flash flooding is from slow-moving thunderstorms. These systems can deposit extraordinary amounts of water over a small area in a very short time. Flash floods are extremely dangerous weather events as water in creeks, drains and natural watercourses can rise very rapidly. **Local flooding** - an intense burst of rainfall over a short period of time may cause excessive run-off that builds up in a relatively small area and causes localised flooding. Inundation is expected to last only for a limited period of time, around one to two hours. **Regional flooding** - continuous heavy rainfall across a number of large catchments within the region's flood plains. It may take between one and two days for these floodwaters to subside. **Riverine flooding** - similar to regional flooding but on a larger scale.
Hazard	A source of potential harm, or a situation with a potential to cause loss. (Australian Emergency Management Glossary, 1998)
Incident	Day to day occurrences, being an emergency or sudden event accidentally or deliberately caused which requires a response from one or more emergency response agencies by itself or in cooperation with other response agencies.
Incident Coordination Centre / Field Co-ordination centre	Location or room from which response operations are managed for emergency incidents or situations.
Mitigation	Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment. (Australian Emergency Management Glossary, 1998)
Planning	Development of systems for coordinating disaster response and establishing priorities, duties, roles and responsibilities of different individuals and organisations, including actual state of preparedness.
Preparedness	All activities undertaken in advance of the occurrence of an incident to decrease the impact, extent and severity of the incident and to ensure more effective response activities. Arrangements to ensure that, should an emergency occur, all those resources and services which are needed to cope with the effects can be efficiently mobilised and deployed. Measures to ensure that, should an emergency occur, communities, resources and services are capable of coping with the effects. (Australian Institute Disaster Resilience Glossary).
Prevention	Measures to eliminate or reduce the incidence or severity of emergencies.

	(Australian Institute Disaster Resilience Glossary)
Public Cyclone Shelter	A building designed, constructed and maintained in accordance with government requirements and provides protection to evacuees during a cyclone. (Queensland Prevention, Preparedness, Response and Recovery Disaster Management Guideline, 2018)
Public Safety Preservation Act 1986	An Act to provide protection for members of the public in terrorist, chemical, biological, radiological or other emergencies that create or may create danger of death, injury or distress to any person, loss of or damage to any property or pollution of the environment and for related purposes.
Queensland Disaster Funding Guidelines (QDFG) 2021	These guidelines outline Queensland's two disaster relief and recovery arrangements: the Disaster Recovery Funding Arrangements (DRFA) and the State Disaster Relief Arrangements (SDRA), and should be used for events that occur from 1 July 2021 onwards. DRFA – Disaster Recovery Funding Arrangements; Category A, B, C & D. SDRA – State Disaster Relief Arrangements; assistance for individuals, small business, primary producers and not for profit organisations.
Reconstruction	Actions taken to re-establish a community after a period of rehabilitation after a disaster. Actions would include construction of permanent housing, restoration of all services, and complete resumption of the pre-disaster state. (Australian Emergency Management Glossary, 1998)
Recovery	The coordinated process of supporting emergency affected communities in reconstruction of the physical infrastructure and restoration of emotional, social, economic, and physical wellbeing. (Australian Institute Disaster Resilience Glossary)
Rehabilitation	The operations and decisions taken after a disaster with a view to restoring a stricken community to its former living conditions, whilst encouraging and facilitating the necessary adjustments to the changes caused by the disaster. (Australian Institute Disaster Resilience Glossary)
Relief	The provision of immediate shelter, life support and human needs of persons affected by, or responding to, an emergency. It includes the establishment, management and provision of services to emergency relief centres. (Australian Institute Disaster Resilience Glossary)
Residual Risk	is the disaster risk that remains even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained. (United Nations Office for Disaster Risk Reduction, 2017)
Resilience	A system or community's ability to rapidly accommodate and recover from the impacts of hazards, restore essential structures and desired

	functionality, and adapt to new circumstances. The Queensland Strategy for Disaster Resilience identifies four new strategic commitments to enhance disaster and community resilience. • Embed disaster risk reduction and resilience into decision-making • Address systemic disaster risk by coordinating across stakeholders and sectors • Enhance risk reduction and capacity building programs. • Align investment pathway opportunities to local needs (Queensland State Resilience Strategy, 2022 - 2027)
Response	Measures taken in anticipation of, during and immediately after an emergency to ensure its effects are minimised, and that people affected are given immediate relief and support. (Australian Institute Disaster Resilience Glossary)
Resources	All personnel, vehicles, plant and equipment available, or potentially available, for incident tasks. (Australian Institute Disaster Resilience Glossary)
Risk	The chance of something happening that may have an impact on the safety and wellbeing of your community. It includes risk as an opportunity as well as a threat and is measured in terms of consequences and likelihood. (Adapted from AS ISO 31000:2018)
Risk Identification	The process of identifying what can happen, why, and how. (Australian Emergency Management Glossary, 1998)
Risk Management	The culture, processes, and structures that are directed towards realising potential opportunities whilst managing adverse effects. (AS ISO 31000:2018)
Risk Reduction	Actions taken to lessen the likelihood, negative consequences, or both, associated with a risk. Aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. (Australian Institute Disaster Resilience Glossary)
Risk Treatment	The purpose of risk treatment is to select and implement options for addressing risk. (AS ISO 31000:2018)
Serious Disruption	Serious disruption means: (a) Loss of human life, or injury or illness (b) Widespread or severe property loss or damage (c) Widespread or severe damage to the environment (s13 (2) *Disaster Management Act 2003*)

Vulnerability	The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards. For positive factors which increase the ability of people to cope with hazards, see also the definition for 'capacity'. (United Nations Office for Disaster Risk Reduction, 2017)

PART 4. ROLE OF LOCAL GOVERNMENT

The Disaster Management Act 2003 details a range of functions and responsibilities for local government to ensure that it meets its statutory obligations. Section 80 of the Act requires local government to undertake the following functions:

1. To ensure it has a disaster response capability.
2. To approve its local disaster management plan prepared under part 3 of the Act.
3. To ensure information about an event or a disaster in its area is promptly given to the district disaster coordinator for the district in which its area is situated.
4. To perform other functions given to the local government under the Act.

In addition to these functions; section 29 of the Act specifies that local government must establish a Local Disaster Management Group (LDMG) for the local government's area.

PART 5. LOCAL DISASTER MANAGEMENT GROUP (LDMG)

5.1 Establishment

The Livingstone Shire LDMG is established in accordance with s29 of the Act.

> "A local government must establish a Local Disaster Management Group (local group) for the local government's area".

5.2 Functions of a Local Group

Section 30 of the Act prescribes a range of functions to be performed by the local group. These functions are to:

1. Ensure disaster management and disaster operations in the area are consistent with the state group's strategic policy framework for disaster management for the State.
2. Develop effective disaster management, and regularly review and assess the disaster management.
3. Help the local government for its area to prepare a local disaster management plan.
4. Identify and provide advice to the relevant district group about support services required by the local group to facilitate disaster management and disaster operations in the area.
5. Ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to and recovering from a disaster.
6. Manage disaster operations in the area under policies and procedures decided by the State Disaster Management Group.
7. Provide reports and make recommendations to the relevant district group about matters relating to disaster operations.
8. Identify and coordinate the use of resources that may be used for disaster operations in the area.

9. Establish and review communication systems in the group, and with the relevant district group and other local groups in the disaster district of the relevant district group, for use when a disaster happens.
10. Ensure information about a disaster in the area is promptly given to the district group.
11. Perform other functions given to the group under the Act.
12. Perform a function incidental to a function mentioned in paragraphs above.

5.3 Membership

Section 33 of the *Disaster Management Act 2003* states a local group consists of the persons prescribed by regulation to be members of the group. Members of the LDMG have been appointed by the LSC in accordance with s9 of the *Disaster Management Regulation 2014*.

In appointing people to the Local Group, Livingstone Shire Council (LSC) has sought to select representatives from those agencies and organisations representing Livingstone Shire who:

1. Have a key role in responding to disaster or emergency situations
2. Have the qualifications and experience required
3. Manage key assets
4. Provide essential community services, or
5. Provide deputies and liaison officers to ensure succession planning.

Membership of the Group will be reviewed annually by the Local Disaster Coordinator (LDC) in consultation with the Chair of the Group. The Chief Executive of the Department and the Rockhampton District Disaster Coordinator (DDC) will be advised of the membership of the Group as per the requirements of s37 of the Act.

In addition to its members, the Local Group may seek the assistance of individuals or organisations as circumstances require. These persons sit as advisors to the group. They will receive copies of the agendas and minutes and can attend and participate in meetings and discussions as required but do not have voting rights on decisions.

5.4 Chair and Deputy Chair

Under s34 of the Act and s10 of the Regulation the LSC appoints a Councillor of the LSC as chair of the LDMG. Council has appointed Cr Adam Belot; who is the Mayor of LSC as the chair of the LDMG.

Under the same legislation Council also appoints a deputy chair and has appointed Cr Pat Eastwood as the Deputy Chair of the Livingstone Shire LDMG.

5.4.1 Functions of Chair of Local Group

Section 34A of the Act identifies that the chairperson of a local group has the following functions—

1. To manage and coordinate the business of the group
2. To ensure, as far as practicable, that the group performs its functions
3. To report regularly to the relevant district group, and the chief executive of the department, about the performance by the local group and its functions.

5.5 Local Disaster Coordinator

In accordance with section 35 of the Act, the Chair of the LDMG must, after consultation with the

Commissioner, Queensland Police Service (QPS), appoint a Local Disaster Coordinator (LDC) for the group. A person may only be appointed as a LDC if the Chair is satisfied that the person has the necessary experience or expertise to perform the functions of the LDC.

The LDC is supported by the Deputy Local Disaster Coordinator. The Chairperson has appointed the Coordinator of Disaster Management and Community Resilience as the Local Disaster Coordinator, and the Manager Development and Environment, Greg Abbotts as the Deputy Local Disaster Coordinator.

Section 143(8) states that the LDC may delegate the co-ordinator's functions under s36 to an appropriately qualified person.

The Act notes appropriately qualified includes having the qualifications, experience or standing appropriate to exercise the power.

5.6 Functions of Local Disaster Coordinator

Section 36 of the Act states that the LDC has the following functions:

1. To coordinate disaster operations for the local group
2. To report regularly to the local group about disaster operations
3. To ensure, as far as practicable, that any strategic decisions of the local group about disaster operations are implemented.

5.7 Members of the Local Group

In undertaking their normal LDMG responsibilities, members should ensure they:

4. Attend LDMG activities with a full knowledge of their agency resources and services and the expectations of their agency
5. Are available and appropriately briefed to actively participate in LDMG activities to ensure that plans, projects and operations use the full potential of their agency or function, while recognising any limitations
6. Are appropriately positioned within their agency to be able to commit agency resources to LDMG normal business activities
7. Have a deputy who is appropriately trained to take on their responsibilities should they be unavailable, or, to provide additional support during extended operations
8. Members must be nominated by their agency on the LDMG membership appointment form
9. Contribute to disaster management planning and reviews of Local Disaster Management Plan, sub plans and standard operating procedures
10. Understand the LDMG is made of agencies that share the responsibility
11. Members of the LDMG are to ensure succession planning and nominate a deputy and liaison officer
12. Contribute to the operational plan of the LDMG.

LDMG Group members should maintain a state of readiness for activations by:

1. Maintaining current contact registers for LDMG members
2. Maintaining copies of the LDMP and supporting documentation, as appropriate
3. Ensuring resources are available to participate in disaster operations i.e. access to a laptop, information management templates, operational checklists, telecommunications and human resource provisions
4. Being appropriately positioned within each agency to be able to commit agency resources to LDMG operational activities

5. Participating in disaster management exercises and training opportunities.

In order to be effective during operations, LDMG member administration and activation processes should include:

1. Immediately informing their agency of the LDMG's activation and reinforcing their role as the designated single point of contact between the LDCC and their agency
2. Maintaining a close liaison with all members of the LDMG including participating in briefings/meetings of the LDMG and operating from the LDCC as required
3. When possible, assessing the likelihood of extended operations and the possible need to implement LDMG member relief arrangements
4. Ensuring appropriate agency specific disaster cost management arrangements are established quickly and utilised effectively, including the collation of financial documentation to ensure costs are captured for reimbursement, where eligible.

All members must have undertaken the required training as identified in the Queensland Disaster Management Training Framework.

5.8 Deputy Members of the Local Group

Members of the LDMG are to identify a Deputy who can attend local group meetings or take on the duties of the member in their absence or unavailability. A person who is a deputy member should have the necessary expertise and experience to fulfil the role of member of the local group if required.

Deputy Members must be nominated by their agency on the Authorisation to Appoint a Deputy Form. Section 14 of the Regulation identifies that:

1. A member of a disaster management group may, with the approval of the chairperson of the group, appoint by signed notice another person as the person's deputy.
2. The deputy may attend a group meeting in the member's absence and exercise the member's functions and powers under the Act at the meeting.
3. A deputy attending a group meeting is to be counted in deciding if there is a quorum for the meeting.

5.8.1 Members of the Livingstone Local Disaster Management Group

The Livingstone Shire LDMG has recognised that all members have agreed roles and responsibilities.

Membership of the group shall mean and include any person acting in the capacity of an appointed member. As at the time of publication, the Livingstone Shire LDMG members include, but are not limited to the following:

Agency	Responsibility
LDMG Executive Positions	**Chair:** Mayor, Livingstone Shire Council **Deputy Chair:** Councillor, Livingstone Shire Council **Local Disaster Coordinator:** Coordinator Disaster Management and Community Resilience, Livingstone Shire Council **Deputy Local Disaster Coordinator;** Manager Development and Environment, Livingstone Shire Council
	Chief Executive Officer **General Manager Infrastructure Services**
Queensland Police Service	**Officer in Charge, Yeppoon Station** **Emergency Management Coordinator**
State Emergency Services	**Local Controller – SES**

Queensland Fire Department	**Area Director - Rural Fire Service**
Queensland Ambulance Service	**Officer in Charge, Yeppoon Station**
Queensland Health	**General Manager Rockhampton, Capricorn Coast and Mount Morgan**
Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities, and the Arts	**Principal Community Recovery Officer (CQ)**
Department of Education	**Infrastructure Manager**

Queensland Government Department of Transport and Main Roads	**Engineer (Fitzroy District)**
ERGON ENERGY	**Manager Emergency Planning and Response**
Queensland Government Maritime Safety Queensland	**Area Manager**
RACQ CAPRICORN HELICOPTER RESCUE	**Executive Director**
Australian Red Cross	**CALD Resilience Officer**
AUSTRALIAN VOLUNTEER COAST GUARD	**Squadron Board Advisor**

SURF LIFE SAVING QUEENSLAND	**Lifeguard Supervisor Wide Bay Capricorn**
ABC Capricornia	**Chief of Staff Capricornia**
Y.H.S TO WORK & TO SERVE Yeppoon State High School	**Business Manager**
Australian Defence Force	**Regional Training Area and Ranges Manager Central Queensland**
Queensland Government Department of Environment and Science	**Senior Ranger Fitzroy – Queensland Parks and Wildlife Services**

5.9 Subcommittees

Subcommittees are responsible for assisting the LDMG to discharge its responsibilities, especially regarding the preparation or implementation of specific plans. The Chairs of the Subcommittees are required to submit updates of their planning and activities to the LDMG during meetings. The process of the specific threat and/or task can be planned for ahead of the season, limiting the potential for disruptions in the decision-making process and to allow for community awareness around the plans to be implemented.

Currently, the Livingstone Shire LDMG has the following subcommittees:

1. Bushfire Subcommittee (Livingstone Area Fire Management Group)
2. Evacuation Subcommittee
3. Evacuation Centre Management Subcommittee
4. Public Cyclone Shelter Subcommittee
5. Recovery and Resilience Subcommittee including:
    a. Regional and Economic Development Taskforce
    b. Environment and Regulatory Taskforce
    c. Built Environment Taskforce
    d. Community Development Taskforce.

5.10 Roles and Responsibilities

State government agencies and organisations have designated responsibilities in disasters which reflect their legislated and/or technical capability and authority with respect to hazards, functions and/or activities of disaster management.

This list is not exhaustive; it focuses on the roles and responsibilities. Importantly, this list aims to ensure, from a whole-of-government perspective, that all accountabilities of the State government with respect to disaster management have been addressed.

Note: Roles and Responsibilities are to be regarded as indicative only

Agency	Roles & Responsibilities
 Livingstone Shire Local Disaster Management Group	**Livingstone Shire Local Disaster Management Group** • Functions as allocated to the group under s30 of the Act • Development of comprehensive local disaster management planning strategies • The development and maintenance of disaster management plans and sub plans • Design and maintenance of a public education/awareness programme, which is delivered through member agency resources • Coordination of support to response agencies • Observation and impact assessment • Provision of public information prior to, during and following disaster events • Recommended areas/locations to be considered for authorised evacuation; • Public advice regarding voluntary evacuation • Identification, resourcing, staffing, management and operation of evacuation centres • Provision of locally based community support services; and

Agency	Roles & Responsibilities
	• Design, maintenance and operation of the LDCC, including the training of sufficient personnel to operate the centre.

Livingstone SHIRE COUNCIL	**Livingstone Shire Council**
	• Management, support, policy advice and coordination of the business of the Livingstone Shire LDMG and its subgroups
	• Ensure it has a disaster response capability
	• Approve its Local Disaster Management Plan (LDMP)
	• Ensure information about an event or a disaster in its area is promptly given to the District Disaster Coordinator (DDC)
	• Provide Council resources necessary to meet statutory obligations
	• Manage damage assessment on behalf of the LDMG
	• Provide and manage resources to support evacuation centres
	• Ensure business continuity of all Council services during and following event
	• Support the SES in partnership with QPS
	• Identification, development, maintenance and operation of a LDCC at a primary location and maintenance of alternative locations
	• Identification and delivery of training and staffing required to operate the LDCC
	• Coordination of disaster operations by the Local Disaster Coordinator (LDC) through the LDCC for the Livingstone Shire LDMG, ensuring that strategic decisions of the Local Group are implemented
	• Coordination of immediate community support and recovery needs in conjunction with DTATSIPCA, including the management and operation of evacuation or temporary relocation centres
	• Assist the community to prepare for, respond to and recover from an event or disaster
	• Issue of public information or warning about disaster situations in accordance with LDMP
	• Provide advice and support to the DDC
	• Development and maintenance of prevention and mitigation strategies such as land use planning and capital works programmes
	• Development and maintenance of a coordinated disaster response capability
	• Maintenance of Council essential services to the community including:
	  ○ animal control;
	  ○ civic leadership;
	  ○ community contact and information provision;
	  ○ disaster and emergency management;
	  ○ environmental protection;
	  ○ maintenance (including debris clearance) of local roads and bridges; and
	  ○ public health.

Queensland Police Service	**Queensland Police Service** • Primary agency for counter-terrorism • Provide management at district level within the Queensland Disaster Management Framework (QDMF) • Evacuation coordination (including off shore islands) • Responsible for the evacuation sub plan • Manage the register of evacuated persons in association with the Australian Red Cross (Register, Find, Reunite) • Support in the management of the Yeppoon Public Cyclone Shelter • Provide information, advice and updates to LDMG as required • Provide liaison officers to the LDCC

Agency	Roles & Responsibilities
	• Assisting the community to prepare for, respond to and recover from an event or disaster • Preservation of peace and good order • Investigation of criminal activities • Undertake coronial investigations • Prevention of crime • Crowd control/public safety • Traffic control, including assistance with road closures and maintenance of road blocks in consultation with other agencies; • Coordination of search and rescue • Security of evacuated areas/premises • Issue of “mandatory” evacuation orders • Traffic Incidents • Control of incident/impact site/s • Coordinate rescue of trapped/stranded persons • Security of specific areas • Control of disaster victim identification and emergency mortuary facilities where required • Tracing of persons • Augmenting emergency communication • Stock control movement • Assistance, on request, with stock and infected material tracing • Assistance with stock destruction • Mass incident response unit • Special emergency response team • Negotiators • Public safety response team • Explosive ordinance response team • Dog squad • State crime operations command • Security intelligence branch, and • Coordinate and control search operations **QPS – Emergency Management** • Assist in the management of the Yeppoon Public Cyclone Shelter • Provide information, advice and updates to LDMG as required • Provide liaison officers to the LDCC • Assist the community to prepare for, respond to and recover from an event or disaster • Review, assess and report on the effectiveness of disaster management by the State at all levels, including local plans • Provision of emergency management officers of coordination, policy and operational advice, at all levels of the State’s disaster management system, including at the local group • Coordination of State and Federal assistance for disaster management and operations • Facilitation of a comprehensive (prevention/preparedness/response/recovery) - all hazards - all agencies approach to disaster management • operation and maintenance of the State Disaster Coordination Centre (SDCC) • Manage resupply operations • Coordinate and manage the deployment of SES across the State • Support the deployment of Queensland Corrective Services resources

Agency	Roles & Responsibilities
	• Support the provision of public information during disaster and emergency situations.
State Emergency Service	**State Emergency Service** • Provide management system for SES volunteers; • Assist in the management of the Yeppoon Public Cyclone Shelter; • Provide information, advice and updates to LDMG as required • Provide liaison officers to the LDCC • Assist the community to prepare for, respond to and recover from an event or disaster • Search operations for missing persons (QPS to coordinate) • Provision of emergency lighting • Flood boat operations – search and rescue (QPS to coordinate) • Tarping damaged roofs • Sandbagging • Chainsaw operations (cutting and removing fallen trees or trees at risk of falling) • Support to agencies/services as required • Assistance in community information services • Augment emergency communication • Assistance in traffic control • Perform activities to raise the profile of the SES.
Queensland Fire Department	**Queensland Fire Department** • Primary agency for bushfire • Primary agency for chemical/hazardous materials related incidents • Fire control and prevention • Specialist urban search and rescue • Specialist rescue – confined space, high angle and swift water rescue • Assist in the management of the Yeppoon Public Cyclone Shelter • Provide information, advice and updates to LDMG as required • Provide liaison officers to the LDCC • Provide impact assessment and intelligence gathering capabilities • Provide logistical and communication support to disasters within capabilities • Provision of advice and communication with the LDC and DDC about the operations of the Incident Command Centre (ICC) and Regional Operations Centre (ROC) • Request and provide assistance through the LDCC as required during disaster operations • Rapid damage assessment capabilities • Management of hazardous material situations • Provision of expert advisory services on chemicals and hazardous materials through the Scientific Unit • Development of fire prevention and mitigation strategies and response plans • Provide control, management and pre-incident planning of fires (structural, landscape and transportation) • Safety of persons in relation to fire prevention, suppression, response and recovery operations • Advice and directions on public safety/evacuation from fire danger zones • Assisting the community to prepare for, respond to and recover from an event or disaster e.g. public education and awareness programmes

Agency	Roles & Responsibilities
	• Provide rescue capability for persons trapped in any vehicle, vessel, by height or in a confined space • Provide rescue of person/s isolated or entrapped in swift water/flood water events • Assist in pumping out and clean-up of flooded buildings, and • Provide mass and technical decontamination capabilities under State Biological Disaster and State Radiological Disaster Response.
Queensland Ambulance Service	**Queensland Ambulance Service** • Assist in the management of the Yeppoon Public Cyclone Shelter • Provide information, advice and updates to LDMG as required • Provide liaison officers to the LDCC • Collaborate with Queensland Clinical Coordination Centre in the provision of paramedics for rotary wing operations • Participate in search and rescue, evacuation and victim reception operations • Participate in health facility evacuations • Collaborate with Queensland Health in mass casualty management systems • Provide disaster, Urban Search and Rescue (USAR), chemical hazard (Hazmat), biological and radiological operations support with specialist logistics and specialist paramedics • Emergency pre-hospital patient care assessment, treatment and transportation of ill and/or injured persons, selection of triage and treatment areas • Coordination of all other volunteer first aid groups including QAS first responder groups • The establishment of an on-site triage/treatment area, casualty clearing and vehicle marshalling areas • Assistance with the evacuations of persons with medical conditions (specialised medical transport including aero-medical transport); and • Liaison with all other emergency services, local and state government and non-government agencies
Queensland Health	**Queensland Health** • Functional lead agency for health response • Primary agency for heatwave and pandemic influenza, biological and radiological incidents • Provide information, advice and updates to LDMG as required • Protect and promote health in accordance with *Hospital and Health Boards Act 2011, Hospital and Health Boards Regulation 2012*, *Public Health Act 2005* and other relevant legislation and regulations • Queensland Health provides a whole-of-health emergency incident management and counter disaster response capability to prevent, respond to, and recover from a State declared emergency or disaster event • Hospital and health services provide coordinated multidisciplinary support for disaster response and recovery including specialist health services and specialist health knowledge representation • Provide state representation at the Australian Health Protection Principal Committee • Provide clinical and state wide and forensic services support for disaster and response recovery • Promote optimal patient outcomes • Provide appropriate on-site medical and health support

Agency	Roles & Responsibilities
Central Queensland Hospital and Health Service	• Clinically coordinate aeromedical transport throughout the state. In a disaster situation provide staff to the Emergency Helicopter Tasking Cell, and • Provide health emergency incident information for media communications. **Central Queensland Hospital and Health Service** • Public health advice and warnings • Psychological and counselling services; and coordination of medical resources.
Department of Transport and Main Roads	**Department of Transport and Main Roads** • Functional lead agency for transport systems • Member of the Roads and Transport Recovery Group • Primary agency for ship-sourced pollution where it impacts, or is likely to impact, on Queensland coastal waters • Provide information and advice on the impact of disruptive events on road, rail, aviation and maritime infrastructure as it affects the transport system • Provide information and advice in relation to waterways management • Enable an accessible transport system through reinstating road, rail and maritime infrastructure • Assist with the safe movement of people as a result of mass evacuation of a disaster affected community • Ensure the capability of logistics related industries are appropriately applied to disaster response and recovery activities • Advice to road users through 13 19 40 or visit qldtraffic.qld.gov.au and • Provide information, advice and updates to LDMG as required.
Department of Treaty, Aboriginal and Torres Strait Partnerships, Communities and the Arts	**Department of Treaty, Aboriginal and Torres Strait Partnerships, Communities and the Arts** • Member of the Human and Social Recovery Group • Coordinate provision of human and social recovery services in partnership with Local, State, Federal and non-government agencies that support locally led recovery operations • Work with affected individuals and communities to support their own recovery activities • Maintain linkages with Local, State, Federal and non-government agencies and committees • Maintain a register of State government officers available to assist in human and social recovery when required • Administer relevant human and social recovery SDRA and DRFA relief measures • Manage and direct offers of volunteering through Volunteering Queensland • Disaster relief assistance funding, and • Provide information, advice and updates to LDMG as required.
Department of Housing, Local Government, Planning and Public Works	**Department of Housing, Local Government, Planning and Public Works** • Provide temporary accommodation solutions and services for impacted members of a community – non-social housing clients and/or response/recovery teams • Functional lead agency for Building and Engineering Services • Maintain contact registers for: ○ professional service providers e.g., engineers (geotechnical, structural, civil) heritage architects, other professional officers and consultants;

Agency	Roles & Responsibilities
	○ specialist building contractors, service providers, and suppliers; and ○ building services and trade personnel to support regional based disaster response or recovery operations; • Coordinate structural assistance grant assessments (excluding caravans and vessels) on behalf of DTATSIPCA; • Coordinate temporary office type accommodation for use by State government agencies and departments as forward command posts, recovery centres, local disease control centres, storage facilities and ablution facilities, including connection of building services • Coordinate temporary leased accommodation for State government agencies and departments • Coordinate technical advice on the structural suitability of buildings for use as community evacuation centres, places of refuge or cyclone shelters • Other building and engineering services tasks requested by a DDCC or the SDCC within the scope of the Building and Engineering Services function • Coordinate emergency fleet vehicles • Functional lead agency of the Building Recovery Group • The Building Recovery Group coordinates the efficient and effective information exchange, issue identification and resolution between government agencies, local government, building industry and insurance providers to ensure efficient and prioritised use of available resources in rebuilding dwellings following a disaster; and • Provide information, advice and updates to LDMG as required.
Energy Queensland	• Maintenance of electrical power supply • Advice in relation to electrical power • Restoration of power supply • Safety advice for consumers • Clearance of debris from power lines • Power isolation where necessary • Provide information, advice and updates to LDMG as required, and • Provide liaison officers to the LDCC.
Telstra	• Restoration of Telstra services • Advice regarding Telstra infrastructure damage • Provision of emergency telecommunication equipment, and • Provide information, advice and updates to LDMG as required.

Agency	Roles & Responsibilities
Queensland Government Department of Agriculture and Fisheries	• Primary agency for the containment & eradication of emergency animal & plant diseases, plant and animal pests, invasive plants and animals, residue and contaminates in agricultural commodities and emergency animal welfare incidents (hazard specific – biosecurity events) • Coordinate efforts to prevent, respond to, and recover from plant and animal pests and diseases and invasive plants and animals • Provide advice on livestock welfare • Collaborate with stakeholders with shared responsibilities and other organisations to facilitate prevention, preparedness, response and recovery strategies and priorities for animal welfare management within a community • Provide advice in relation to disaster impacts on agriculture, fisheries and forestry • Coordinate destruction of stock or crops in an emergency pest/disease situation • Administer disaster relief measures including agriculture industry recovery operations as required • Lead the reporting on the disaster impact assessments on the agricultural sector, including an assessment of impact, economic losses and expected recovery • Report on the possible impact seasonal conditions and climate events will have on the agricultural sector • Coordinate the Agriculture Coordination Group with agricultural industry groups that provides information about the effect that a disaster event has on the agriculture, fisheries and forestry industries and the issues that individuals and businesses are facing in responding to, and recovering from a disaster event • Engage with industry on preparedness for climate risks and aids with economic recovery • Assist agriculture and fishery industries in prevention and preparedness though normal business operations and service provision to industry and the communities • Participate in District Disaster Management Groups • Provide advice to LDMG regarding coordination of emergency fodder/feed for livestock in affected areas (Potential for DAF to coordinate emergency fodder/feed supply into disaster affected areas (subject to activation via State Control Centre (SCC)).
Australian Red Cross	• Support the daily operations and management of evacuation centres • Undertake reunification support of evacuees utilising Register.Find.Reunite. on behalf of QPS • Provide psychological first aid and recovery support and referrals to disaster affected people • Provide information, advice and updates to LDMG as required.
Queensland Government Department of Environment, Science and Innovation	**National Parks Management** • All issues within Departmental estate (including certain offshore islands); • Provide public information to estate users via Park Alerts and notifications systems • Provide resources for appropriate response to estate events, and • Provide information, advice and updates to LDMG as required.

Agency	Roles & Responsibilities
Australian Defence Force	• Assist the Byfield community during fire disasters in order to enable the use of Defence areas/land for possible escape routes/options. This is in coordination with QFD and LDMG • Assist nearby communities on as a required basis, during disasters.
Australian Volunteer Coast Guard Association	• Continuation of core business • Provide guidance on safe harbouring practices • Emergency marine radio broadcasting as requested by LDMG • Provide information, advice and updates to LDMG as required • Prior to severe weather, conduct patrols to warn anchored yachts and campers • After severe weather, compile a list of missing or drifting vessels • Following tsunami, conduct offshore patrols • Receive land-based emergency calls on VHF radio and forward to LDCC, and • Maintain coast watch list.
Department of Education	• Liaison between agency and LDMG regarding school closures, available facilities if identified as needed for evacuation, recovery or sheltering options • Support of the operations of the Yeppoon Public Cyclone Shelter, and • Provide information, advice and updates to LDMG as required.
Great Barrier Reef Marine Park Authority	• Provision of advice specific to the marine environment • Provide information, advice and updates to LDMG as required.

Surf Life Saving Queensland	• Provision of additional resources if required and suitable
	• Public notification and advice on beach/sea condition
	• Provide information, advice and updates to LDMG as required
	• Assist in dissemination of warnings
	• Provision of support that enhances capabilities to the local community, specifically in the areas of:
	  ○ Tsunami/storm tide response – preparedness, warnings, response and recovery;
	  ○ cyclone and severe storm response – preparedness, warnings, response and recovery;
	  ○ flood response – preparedness, warnings, response and recovery; and
	  ○ other disasters where the LDMG requires assistance – preparedness, warnings, response and recovery.
	• Close and evacuate beaches on receipt of warnings in consultation with LDMG
	• Assist in search and rescue from surf zone following impact of tsunami/storm tide
	• Provision of specialised equipment and personnel if required and
	• Use of facilities if required.

LDMG BUSINESS AND MEETINGS

In accordance with s38 of the *Disaster Management Act 2003*, the LDMG must conduct its business, including its meetings, in the way prescribed by regulation. Subject to this regulation, a LDMG may conduct its business, including meetings, in the way it considers appropriate.

Section 12 of the *Disaster Management Regulation 2014* (the Regulation) requires the LDMG to meet at least once in every six (6) months. The Livingstone Shire LDMG has resolved to meet four (4) times per year.

5.11 Meeting Types

Ordinary Meeting – A meeting which is scheduled and convened on a regular basis at an agreed time (set by the Chairperson). Ordinary meetings are used to address the general business of the group.

Extraordinary Meeting – A special meeting convened by the Chairperson in response to an operational event. An event would generate its own meeting file for audit purposes. Meeting minutes, attendance sheets and resolution statements must be included in the event file.

5.12 Conduct of LDMG Meetings

Location: Level 2, 7 – 9 James Street, Yeppoon (The Hub)
Duration: Typically 2 to 3 hours (normal business)
Chaired by: Mayor Adam Belot, or in his absence Deputy Chair Cr Pat Eastwood
A date claimer is sent via email to core, advisory and deputy LDMG members well ahead of the next meeting. If any members intend to propose an agenda item, they email the Secretariat who will confirm its inclusion in consultation with the LDC and Chair. The agenda is drafted and forwarded to the LDC and Chair for approval. It is forwarded with the previous meeting's minutes to LDMG members two weeks before the upcoming meeting.

Minutes of such meetings are maintained in accordance with the requirement of the Act. Copies of the minutes are available on request for members and advisors by contacting the Secretariat of the LDMG.

5.13 Quorum

A quorum is required for meeting resolutions to be officiated. LDMG members are required to achieve quorum, which, in accordance with s13 of the Regulation, is equal to one-half of its members holding office plus one, or when one-half of its members is not a whole number, the next highest whole number. For example, if the LDMG comprises Ten (10) members, a meeting is deemed to have achieved quorum if six (6) LDMG members are present.
An attendance sheet is to be completed at the commencement of each LDMG meeting to record member attendance and ensure the meeting has a quorum. This attendance sheet also forms part of the meeting minutes.

If it is anticipated that a scheduled meeting will not achieve quorum, the Chairperson may:

- Proceed with the meeting - allow members to participate remotely using technology (see member attendance at meetings below);
- Proceed with the meeting - endorse any proposed resolutions via a flying minute (see section 'Flying minute');
- Reschedule the meeting - preferred if there are proposed agenda items requiring discussion or endorsement;

- Cancel the meeting – whilst not the preferred option, subject to legislative requirements regarding minimum annual meetings the Chairperson may cancel a meeting if the proposed agenda items can be held over until the next scheduled meeting; or
- If the meeting is cancelled or rescheduled, progress the business via a flying minute – this option allows progression of any urgent agenda items whilst not requiring a physical meeting of the LDMG.

5.14 Member attendance at meetings

LDMG's are encouraged under s17 of the Regulation to hold meetings or allow members of the group to take part in its meetings, by using any technology that reasonably allows members to hear and take part in discussions as they happen. Accordingly, members may attend meetings via teleconference or video conference if appropriate. A member who takes part in a LDMG meeting via teleconference or video conference is taken to be present at the meeting and should be marked on the attendance sheet.

5.15 Member non-attendance at meetings

If a member continually does not attend LDMG meetings it is suggested that the LDMG Executive Team (Chair and LDC) meet with the member to discuss the ongoing non-attendance at LDMG meetings. A formal record of LDMG member attendance should be maintained and this can be used to monitor member attendance across meetings.

A template to monitor progressive meeting attendance is available in *Annexure H - Local Disaster Management Group Forms.*

5.16 Deputy appointment

Section 14 of the Regulation allows a member of a disaster management group, with the approval of the Chairperson, to appoint by signed notice another person or position as their deputy. A template for a member of a LDMG to appoint a person as their deputy is available in *Annexure H – Authorisation to appoint a deputy*.

The deputy may attend a group meeting in the member's absence and exercise the member's functions and powers under the Act at the meeting. A deputy attending a group meeting is to be counted in deciding if there is a quorum for the meeting.

5.17 Flying Minute

Section 16 of the Regulation allows for resolutions to be made by the LDMG, even if not passed at a LDMG meeting, if most members provide written agreement to the resolution and if notice of the resolution is given under procedures approved by the LDMG. A flying minute may be used to progress business of an urgent nature in the instance where convening a meeting of the LDMG is not practicable.

Some guidelines for the use of flying minutes are:

- A flying minute should detail necessary background on the matters being raised and should clearly articulate recommendations for LDMG members' consideration;
- The flying minute should contain a section for members to complete and indicate whether they agree or disagree with the proposed resolution;
- A LDMG briefing paper on the issue should accompany the flying minute endorsement schedule, as it provides in-depth information on the matter which is being considered;
- A LDMG agenda listing the item/s should also be attached;
- As flying minutes are only used for urgent business, they may be conducted via email; and

- Proposed resolutions passed by members via a flying minute are to be included for ratification on the next ordinary LDMG meeting agenda.

Templates for LDMG flying minute, LDMG briefing paper and LDMG agenda are available in *Annexure H – Local Disaster Management Group Forms*.

5.18 Reporting

The typical reporting requirements for the LDMG are:

1. Contact details and membership information;
2. Meeting minutes and their distribution to LDMG members;
3. Status reports LDMG to DDMG;
4. Annual submission of membership of the LDMG to the DDMG; and
5. Maintenance of training and exercise registers.

The LDC is responsible for the administrative responsibilities of the LDMG.

5.18.1 Member Status Reports

Written member status reports on behalf of the member agency are used to update LDMG members on the status of the member agency's disaster management initiatives. This report aligns with the shared responsibility of the IGEM Assurance Framework and includes mitigation, planning and community awareness/education activities, capacity and capability development, projects, disaster management plans, operations and contact information. This information assists the LDMG to evaluate the status of the disaster management and disaster operations for the local government area. In addition, verbal member status reports can be provided at LDMG meetings.

5.18.2 Meeting Minutes

It is a requirement under s18 of the Regulation that a disaster management group keeps minutes of its meetings. The LDMG meeting minutes should provide a summary of key discussion points and resolutions. It is important to remember that the minutes may be subject to public scrutiny under the *Right to Information Act 2009*.

It should be noted in the meeting minutes whether a quorum was established at the meeting. The meeting attendance sheet should then be attached to the back, as it forms part of the meeting minutes as an accurate account of who attended the meeting and whether the meeting had a quorum, thus making any resolutions or decisions valid. An example of a LDMG meeting minutes template which could be used for both ordinary and extraordinary meetings is available in *Annexure H – Local Disaster Management Group Forms*.

5.18.3 Presiding at Meetings

Section 16 of the Regulation stipulates that the Chair is to preside at all meetings at which they are present. If the Chair is absent from an LDMG meeting, but the Deputy Chair is present, they can preside. If both the Chair and the Deputy Chair are absent from a meeting, then:

1. The Chair can nominate a member of the group to preside; or
2. If the Chair does not nominate a member, the Deputy Chair can nominate a member to preside.

If the offices of the Chair and Deputy Chair are both vacant, the member of the group chosen by the members present is to preside.

5.18.4 Resolutions

In order for LDMG meeting resolutions to be validated, it is a requirement under s17 of the Regulation that a majority of members agree to the resolution. This can occur even if the resolution is not passed at the meeting, i.e. via a flying minute.

In order to ensure that resolution requirements are met, the LDMG can conduct its business in numerous ways:

1. Via a meeting where a quorum is achieved, resolutions are passed by a majority of members at the meeting. Those resolutions are then communicated to members via meeting minutes. At the next LDMG members are asked to endorse the meeting minutes; or
2. Via a meeting where a quorum is not achieved and proposed resolutions are identified at the meeting, those proposed resolutions are communicated to members via a flying minute. Members are requested to endorse the flying minute in writing via email to the LDMG Secretariat (email must be received from the appointed member's email address to be counted towards quorum).

5.18.5 Actions Register

In addition to meeting minutes, the LDMG Secretariat should produce an Actions register. The purpose of this document is to provide a running log of actions undertaken and an audit trail through to the acquittal of those actions.

Prior to each ordinary meeting of the LDMG, members will be requested to:

1. Review the current actions register (distributed with meeting papers);
2. Provide (where applicable) a status update advising of any actions undertaken with regard to the action;
3. Capture any actions as a result of discussion outcomes. An action register should be documented. Refer to examples below:
    a. The LDMG decision in relation to <XYZ> is to <<insert the action required and the responsible position/person/s>>; and
    b. The LDMG decision is that this matter will be dealt with out-of-session and the LDMG member/s <<XYZ>> will <<insert what the members are required to do>>. The outcome of this action will be reported back to the LDMG at the next meeting.

The action will remain active on the register until such time that it has been acquitted (e.g. all required actions have been undertaken), when completed it will be recorded as completed in the register.

An example of a LDMG Action Register is available in *Annexure H – Local Disaster Management Group Forms*.

5.18.6 Resolutions Register

For governance purposes, a register detailing each resolution passed by the LDMG including necessary details of actions undertaken to acquit the resolution should be kept. This provides an easy reference document and a historical record of LDMG resolution statements.
An example of a LDMG Resolutions Register is available in *Annexure H – Local Disaster Management Group Forms*.

5.18.7 Correspondence Register

In order to assist with tracking of inward and outward LDMG correspondence, it is suggested that a LDMG Correspondence Register is kept. This allows for all members to be aware of any correspondence that concerns the LDMG and will assist with the information flow and decision making of the LDMG.

5.18.8 Annual Reporting

LDMG's play an integral part in the disaster management of the State, and it is important that they have input into the QDMC annual reporting process. LDMGs are required to complete a status report at the end of each financial year and provide the completed report to the relevant DDC. LDMGs may contact the QPS Emergency Management member in the group for advice and assistance in the completion of the status report.

A template for LDMGs to develop a disaster management status report is available in *Annexure H – Local Disaster Management Group Forms*.

The DDMG will compile the DDMG Annual Report by incorporating information provided in the LDMG status reports. The Queensland Disaster Management Committee (QDMC) receives the DDMG Annual Reports at the end of July each year. The reports are then reviewed to ensure disaster management groups are meeting their legislative requirements and incorporated into the QDMC annual reporting process. The QDMC is required under s44 of the *Disaster Management Act 2003* to prepare an annual report about disaster management in the State following each financial year.

QDMC Annual Reports are publicly available at www.disaster.qld.gov.au

5.18.9 Records Maintenance

Records management is an activity targeting preservation of evidence of actions, decisions and important communications by creating, keeping and maintaining records of these actions, decisions and communications. Public records are protected by the *Public Records Act 2002* and maybe subjected to public scrutiny under the *Right to Information Act 2009*.

A public record is a file providing evidence of actions, decisions, activities and functions of a disaster management group. This can include internal or external correspondence including letters, emails, memos, reports, minutes, agendas, complaints, contact with the community, other agencies etcetera. LDMGs must ensure that these records are complete, authentic, reliable, inviolate and usable.

The LDMG must comply with the legal, evidentiary and financial requirements (including lawful and accountable disposal of records) when managing LDMG records. The Queensland State Archives General Retention and Disposal Schedule for Administrative Records outlines the requirements for retaining documents in accordance with the *Public Records Act 2002*.

The schedule and further information for LDMGs, including managing records during disaster events, can be obtained at www.archives.qld.gov.au in the section "Services to Government".

5.18.10 Letterhead

As LDMG business is conducted on behalf of the relevant local government or combined local governments, the relevant local government letterhead and logos, or LDMG letterhead and logos should be used for all LDMG business.

PART 6. DISASTER RISK ASSESSMENT

6.1 Community Context

The Livingstone Shire Council is situated in the Central Queensland region and has an area of 11,780 square kilometres. The Shire is bordered by Isaac Regional Council to the north, Central Highlands to the west, and Rockhampton Regional Council to the south-west.

The region consists of diverse topographical areas including significant rural, coastal and inland plains to natural and cultivated forests and offshore islands (some of which are populated). There are two main urban centres including Yeppoon and Emu Park and a total of 66 localities.

Figure 1: Livingstone Shire Council

6.2 Terrain

The topography of Livingstone Shire is clearly marked by the islands of Keppel Bay and the Keppel group of islands to the east, plus small inshore islands south of Bluff Point. Coastal headlands and associated hills of Spring Head, Coast Range, Wreck Point, Wave Point, Double Head, Bluff Point, Tanby Point, Ritamada Point, Emu Point, and a group of small headlands (Rocky Point, Arthurs Point, Zilzie Point and Cocoanut Point). Mangrove lined creeks and wetlands are prevalent at Corio Bay, Fishing Creek, Yeppoon, Shoalwater Bay, Cawarral Creek, and major mountain peaks of Gai-i, Constitution Hill, Baga, Mt Chalmers and the Berserker Range to the southwest. The Ross Range behind Keppel Sands, the Tanby Range behind Lammermoor to Kinka Beach, and the Coast Range extending northeast from the coastline at Yeppoon. Mt Barmoya, Grays Hill and Mt Lizard to the north-west, and a series of isolated peaks west of Yeppoon, in the Limestone Creek Valley.

6.2.1 Sensitive Environments

Within the Livingstone Shire there is 756km² of protected land made up of National Parks and State Forests. This land contains environmentally significant ecosystems and is popular with residents and visitors to the region.

6.3 Climate

Livingstone Shire is situated near the Tropic of Capricorn and experiences two seasons – wet and dry with the wet season spanning from December to February.

The regions climate may be classified as subtropical. Average annual rainfall is approximately 630mm per year.

Table 1: Average daily temperature range varies depending on the season.

	Summer/wet Season		Winter/dry Season	
	Min	Max	Min	Max
Inland	22	32	9	23
Coastal	23	30	12	27

6.4 Population and Settlement

6.4.1 Main Centres

Yeppoon (EP-poon)(23.08S – 150.44E) – is a well known beachside town on the Capricorn Coast bounded by the Pacific Ocean, approximately 40 km north east of Rockhampton and is accessible via Yeppoon Road (east-west) and the Scenic Highway to Emu Park (north-south). It is a modern town which provides service facilities and all tourist requirements. The coastline is protected by the Great Barrier Reef and the Keppel Bay Islands. The Capricorn Coast has some of the most picturesque and safe swimming beaches in Australia.

It is the primary urban centre for coastal communities. Once a small centre for pineapple growers and sugar cane farmers, Yeppoon has developed into a popular tourist destination surrounded by attractive beaches and is within easy reach of the Keppel Isles including Great Keppel Island (Wop-pa).

Emu Park (Wu-Pai) (23.16S – 150.50E) – is a seaside town approximately 20km south of Yeppoon and 45km northeast of Rockhampton. It is a popular tourist destination and is accessible via Emu Park Road (east to west) and the Scenic Highway to Yeppoon (north to south).

6.4.2 Community Snapshots

The community snapshots provide an overview of the localities, of Livingstone Shire Council, from a human social, disaster management perspective. The initiative's primary purpose is to gain a greater understanding of the communities, their perception of the relevant hazards, and their recovery and preparedness statuses. This insight is then translated into identified strengths, vulnerabilities and potential opportunities for further activities, to assist the communities build their resilience and to prepare, respond and recover from future events. The snapshots have asked, through proactive community engagement activities, members from within those localities for information and a description of their community. The snapshots identify:

- Connect with community champions (key contacts);
- Connect with key networks and groups (community and sporting, formal and informal, and services);
- The population's demographics (industry, employment, age etc.);
- Key community assets of significance to the community (parks, halls, emergency service facilities, showgrounds, schools, aged care facilities etc.);
- Key infrastructure – road networks, utilities, communication networks;
- How the community communicates and receives information;
- What and where the community accesses services;
- Natural and non-natural vulnerabilities; and
- Local trends, issues and barriers.

Key contacts, individuals connected to/within their communities, with a good community network and understanding of their community, have been identified through this process. Their contact details are maintained within the snapshots, and these individuals are able to provide or ground truth information to the Local Disaster Coordination Centre/Local Disaster Management Group on what is happening within that community.

The snapshots can be referred to when carrying out the natural hazard risk assessment, and in identifying actions that are appropriate to each locality. The snapshots will assist to tailor preparedness messaging and education, while this initial mapping work can inform the development of a Community Plan.

6.4.3 Demography

The following statistics are based on the Queensland Regional Profiles: Resident Profile for Livingstone Shire, Government Statistician, Queensland Treasury and Trade using the latest demographic, social and economic data available from the 2021 Census.

Population

The estimated resident population of Livingstone is 39,881 persons as at 30 June 2021 (*Table 2*) with an average annual growth rate of 1.5% over 5 years which is consistent with Queensland. The estimated projected population of Livingstone Shire by 2041 is 55,740 indicating an average annual growth rate of 1.6% over 25 years, inline with Queensland's 1.6%. Population growth will have implications for disaster risk management for the Livingstone Shire. The Disaster Management and Community Resilience unit will monitor population change and consider associated risks and required responses as part of its overall approach to the safety of the region.

Table 2: Estimated resident population, Livingstone Shire LGA and Queensland, 2021

LGA / State	As at 30 June			Average annual growth rate	
	2011	2016	2021pr	2011–2021pr	2016–2021pr
	— number —			— % —	
Livingstone (S)	33,394	36,950	39,881	1.8	1.5
Queensland	4,476,778	4,845,152	5,217,653	1.5	1.5

Source: ABS, *Regional population*, various editions

Age

The median age of the population of Livingstone Shire Council is 43.1 years old. The 2021 census data *(Table 3)* highlights 19.6% of Livingstone's estimated resident population are aged 65 years and over, compared with Queensland's 16.6%. Additionally, Livingstone's residents aged 25 to 44 are significantly lower at 23.0% when compared to Queensland's 27.2%.

Table 3: Estimated resident population by age, Livingstone Shire LGA and Queensland, 2021

LGA / State	Age group									
	0–14		15–24		25–44		45–64		65+	
	number	%	number	%	number	%	number	%	number	%
Livingstone (S)	7,364	18.5	4,276	10.7	9,165	23.0	11,242	28.2	7,834	19.6
Queensland	989,461	19.0	651,113	12.5	1,416,854	27.2	1,295,777	24.8	864,448	16.6

Source: ABS, *Regional population by age and sex*, 2021

Migration Rates

Within the last year 14.9% of the community (*Table 4)* were living somewhere else, whether still within Queensland, Australia or overseas. Five years ago, 39.1% of the population participating in the 2021 census were living outside of the LSC region *(Table 5).* Therefore, there is a risk of new residents not being aware of the hazards posed in the region and how to prepare. This is further exacerbated if residents have previously lived in a different climate and environment for example the United Kingdom.

Table 4: Place of usual residence one year ago[a], Livingstone Shire LGA and Queensland, 2021

LGA / State	Same address	Different address				Proportion with different address	Total persons[c]
		Within Queensland	Rest of Australia	Overseas	Total[b]		
	number	— number —				%	number
Livingstone (S)	29,298	5,150	475	108	5,834	14.9	39,040
Queensland	3,909,222	719,541	97,770	34,773	868,358	17.0	5,100,249

(a) Based on persons aged one year and over.
(b) Includes persons who stated that they were usually resident at a different address 1 year ago but did not state that address.
(c) Includes persons who did not state whether they were usually resident at a different address 1 year ago.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G44*

Table 5: Place of usual residence five years ago[a], Livingstone Shire LGA and Queensland, 2021

LGA / State	Same address	Different address				Proportion with different address	Total persons[c]
		Within Queensland	Rest of Australia	Overseas	Total[b]		
	number	— number —				%	number
Livingstone (S)	18,842	12,311	1,488	529	14,621	39.1	37,418
Queensland	2,348,035	1,635,871	276,658	215,572	2,178,913	44.8	4,863,678

(a) Based on persons aged five years and over.
(b) Includes persons who stated that they were usually resident at a different address 5 years ago but did not state that address.
(c) Includes persons who did not state whether they were usually resident at a different address 5 years ago.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G45*

Cultural Characteristics

Livingstone Shire is a multicultural community. According to the 2021 Census 5.4% of the population are of Aboriginal and/or Torres Strait Islander descent (*Table 6)*. Furthermore 10.1% of residents were born overseas (*Table 7)*. This creates potential issues with communicating warnings and notifications due to language barriers. The top non-English speaking backgrounds and the percentage of the population they represent in Livingstone Shire are:

1. Philippines 0.5%
2. Germany 0.3%
3. Netherlands 0.2%
4. Thailand 0.1%
5. Papua New Guinea 0.1%

Additionally, 2.9% of the population speaks another language at home and speaks English not well or not at all, again adding to the difficulties of disseminating public information (*Table 8*).

Table 6: Indigenous status, Livingstone Shire LGA and Queensland, 2021

LGA / State	Indigenous persons					Non-Indigenous persons		Total persons[b]
	Aboriginal	Torres Strait Islander	Both[a]	Total				
	— number —			number	%	number	%	number
Livingstone (S)	1,871	102	149	2,118	5.4	34,305	87.1	39,398
Queensland	193,405	21,772	22,122	237,303	4.6	4,635,042	89.9	5,156,138

(a) Applicable to persons who are of 'both Aboriginal and Torres Strait Islander origin'.
(b) Includes Indigenous status not stated.

Source: ABS, *Census of Population and Housing, 2021, Aboriginal and Torres Strait Islander Peoples Profile - I02*

Table 7: Country of birth, Livingstone Shire LGA and Queensland, 2021

LGA / State	Born in Australia[a]		Born overseas						Total persons[d]
			Born in ESB countries[b]		Born in NESB countries[c]		Total[c]		
	number	%	number	%	number	%	number	%	number
Livingstone (S)	32,261	81.9	2,698	6.8	1,289	3.3	3,992	10.1	39,398
Queensland	3,680,014	71.4	524,705	10.2	645,628	12.5	1,170,334	22.7	5,156,138

Refer to explanatory notes for additional information.

(a) Includes 'Australia', 'Australia (includes External Territories), nfd', 'Norfolk Island' and 'Australian External Territories, nec' responses.
(b) Based on the main English speaking countries of UK, Ireland, Canada, USA, South Africa and New Zealand.
(c) Includes countries not identified individually, 'Inadequately described' and 'At sea' responses.
(d) Includes not stated responses.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G01 and G09*

Table 8: Proficiency in spoken English or overseas-born persons, Livingstone Shire LGA and Queensland, 2021

LGA / State	Speaks English only		Speaks other language at home and speaks English						Persons[a]
			Very well or well		Not well or not at all		Total		
	number	%	number	%	number	%	number	%	number
Livingstone (S)	34,555	87.7	1,072	2.7	84	0.2	1,153	2.9	39,398
Queensland	4,151,206	80.5	605,200	11.7	90,855	1.8	696,056	13.5	5,156,138

Refer to explanatory notes for additional information.

(a) Includes the categories 'Proficiency in English not stated' and 'Language and proficiency in English not stated'.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G13*

Economy

The median income for Livingstone Shire residents is $39,780 (*Table 9)* with 23.7% of residents earning less than $20,800 per year. Furthermore, December 2022 quarter figures reveal a total 2.1% of the residents are unemployed. Limited access to resources can have impacts on a household's ability to prepare and recover from a disaster. This could mean greater reliance on local government and not-for-profit organisations for support in an event.

Table 9 Total personal income, Livingstone Shire LGA and Queensland, 2021

LGA / State	Less than $20,800 per year		$20,800 to $51,999 per year		$52,000 to $103,999 per year		$104,000 or more per year		Total[(a)]	Median ($/year)
	number	%	number	%	number	%	number	%	number	$
Livingstone (S)	7,656	23.7	9,441	29.3	7,369	22.8	3,957	12.3	32,261	39,780
Queensland	999,942	23.9	1,316,078	31.4	1,085,654	25.9	461,162	11.0	4,191,812	40,924

Refer to explanatory notes for additional information.

(a) Includes personal income not stated.

Source: ABS, Census of Population and Housing, 2021, General Community Profile - G02 and G17

Table 10: Employment by industry, Livingstone Shire LGA and Queensland, Livingstone Shire LGA and Queensland, 2021

Industry	Livingstone (S) LGA		Queensland		Specialisation ratio
	number	%	number	%	number
Agriculture, forestry and fishing	589	3.3	62,444	2.6	1.31
Mining	1,730	9.8	55,486	2.3	4.32
Manufacturing	642	3.6	140,285	5.7	0.63
Electricity, gas, water and waste services	341	1.9	28,814	1.2	1.64
Construction	1,849	10.5	222,234	9.1	1.15
Wholesale trade	367	2.1	57,743	2.4	0.88
Retail trade	1,489	8.4	226,468	9.3	0.91
Accommodation and food services	1,277	7.2	175,850	7.2	1.01
Transport, postal and warehousing	644	3.7	115,870	4.7	0.77
Information media and telecommunications	56	0.3	23,379	1.0	0.33
Financial and insurance services	226	1.3	62,436	2.6	0.50
Rental, hiring and real estate services	253	1.4	42,931	1.8	0.82
Professional, scientific and technical services	587	3.3	164,129	6.7	0.50
Administrative and support services	527	3.0	81,926	3.4	0.89
Public administration and safety	1,220	6.9	150,358	6.2	1.13
Education and training	1,919	10.9	216,015	8.8	1.23
Health care and social assistance	2,337	13.3	375,511	15.4	0.86
Arts and recreation services	186	1.1	37,550	1.5	0.69
Other services	755	4.3	95,768	3.9	1.09
Total[(a)]	**17,627**	**100.0**	**2,444,090**	**100.0**	**1.00**

Refer to explanatory notes for additional information.

(a) Includes inadequately described and not stated responses.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G54* and unpublished data

PART 7. COMMUNITY CAPACITY

7.1 LDMG Capacity

During disaster events the Livingstone Shire Local Disaster Management Group has a response and recovery capability, which includes:

- Livingstone Shire Council, which employs approximately 401 personnel including:
  - A Disaster Management and Resilience Unit.

- Emergency services, which maintain stations within the region:
  - Queensland Police Service;
  - Queensland Ambulance Service; and
  - Queensland Fire Department

- Emergency services volunteers, including:
  - Rural Fire Service brigades.
  - State Emergency Service, with seven operational groups located across the region
    - Emu Park
    - Great Keppel Island
    - Keppel Sands
    - Marlborough
    - Stanage
    - Yaamba, and
    - Yeppoon.
  - Coast Guard, with three operational groups including:
    - Yeppoon (QF 11)
    - Keppel Sands (QF 20), and
    - Stanage - Thirsty Sound (QF 24).
  - Surf Life Saving Queensland
    - Yeppoon SLSC

  Emu Park SLSC
- Queensland Government departments:
  - Department of Transport and Main Roads
  - Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts
  - Department of Housing, Local Government, Planning and Public Works
  - Department of Environment, Science and Innovation
  - Department of Agriculture and Fisheries
  - Department of Energy and Public Works
  - Queensland Health
  - Department of Education

- Other agencies that contribute to the region's disaster management arrangements, including:
  - Energy Queensland
  - Australian Defence Force
  - Australian Broadcasting Corporation

- Numerous community service organisations that contribute to the Shire's disaster management arrangements, including:
  - Australian Red Cross
  - Lifeline
  - Salvation Army
  - St Vincent de Paul Society
  - Service clubs
  - Lions Clubs
  - Rotary Clubs
  - Central Queensland Amateur Radio Association
  - Culturally and linguistically diverse community organisations
  - Centacare
  - Blue Care
  - Home Support, and
  - Meals on Wheels.

7.1.1 Critical Lifelines/Infrastructure

7.1.1.1 Road Network

The main roads in Livingstone Shire are the Bruce Highway from Glenlee to the north boundary, Yeppoon Road and Emu Park Road which are the main access routes to Yeppoon and Emu Park from Rockhampton. Secondary roads are:

- Stanage Bay Road
- Byfield Road
- Keppel Sands Road
- Scenic Highway
- Cawarral Road
- Tanby Road
- Coorooman Creek Road
- Panorama Drive, and
- Farnborough Road.

These roads link smaller catchment communities to the main centres of Yeppoon and Emu Park. The predominant threats to the roads in Livingstone Shire are large or multi-vehicle accidents and high rainfall events causing flash flooding.

Water

In the Livingstone Shire, the primary water supply is sourced from Waterpark Creek. The water is treated at the Woodbury Water Treatment Plant and then pumped out to homes and businesses. Properties outside of the water network rely on rain water tanks or carters. The secondary, contingency supply is from the Boundary Reservoir located on the Rockhampton Yeppoon Road. A contract exists between LSC and Fitzroy River Water regarding the conditions of supply. Fitzroy River Water (FRW) is responsible to ensure the reservoir is full and supplying a minimum of 3ML a day. LSC is responsible for the pipelines and connections from the reservoir. In a situation that disrupted the supply from the primary source, there is the ability to increase the amount sourced from the secondary.

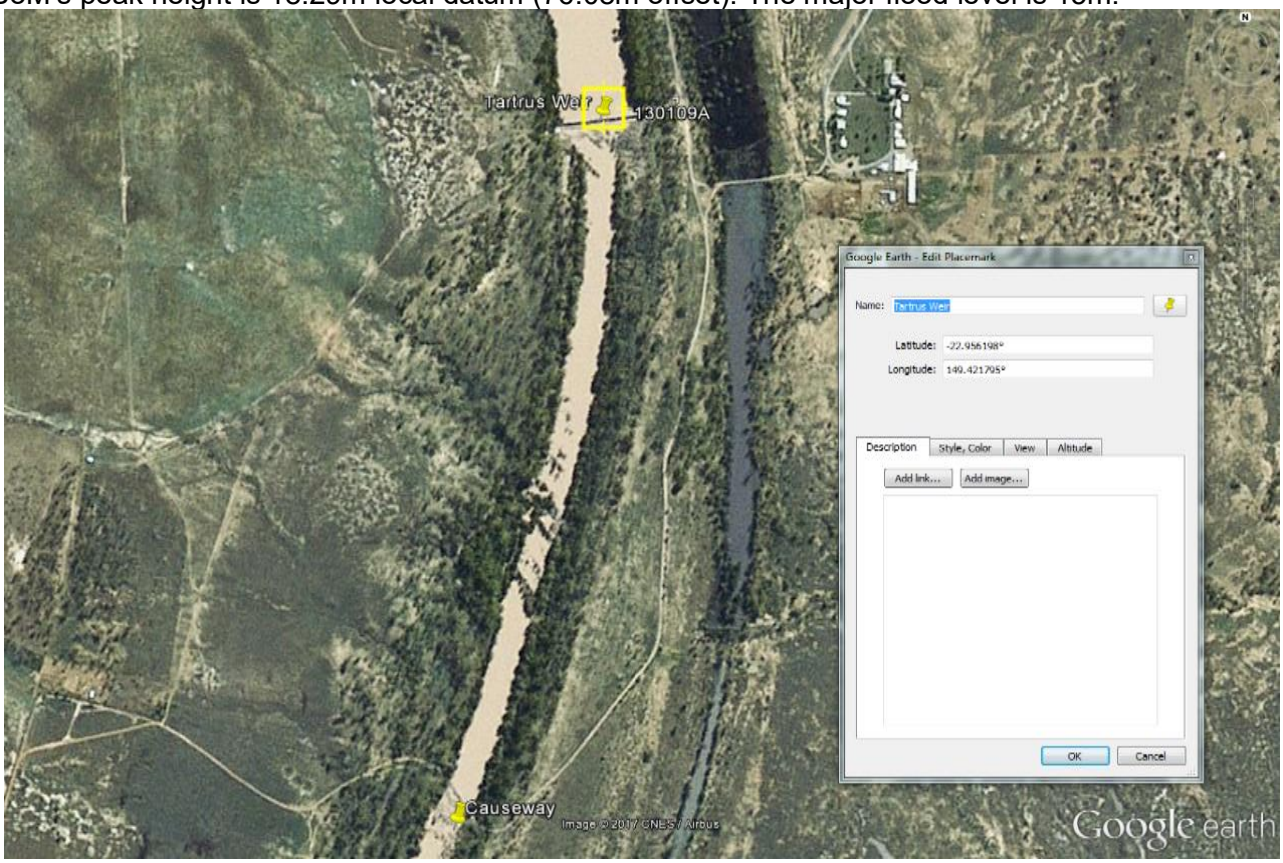
Council has multiple sites that have backup generators installed. These include sewage treatment plants, water treatment plants, water pump stations and reservoir sites. Livingstone Shire Council work with Energy Queensland to identify priority locations that would require mobile generation in the event of a power outage.

Controlled Dams and Weirs

One controlled dam exists in the Livingstone Shire, Kelly's Off stream Storage. This dam has a separate Emergency Action Plan.

Tartrus Dam is located downstream of the convergence of the Upper Mackenzie River and the Isaac River. It is an ogee-crested mass concrete weir that stores 12,000ML at full supply level 81.75 ML. Its outlet works consist of a 1200mm diameter reinforced concrete pipe controlled by a circular penstock gate. This river section covers the ponded area of the storage formed by the Tartrus Weir on the Mackenzie River downstream to the junction of Springton Creek.

BoM's peak height is 18.29m local datum (76.08m offset). The major flood level is 15m.



Sewerage

LSC provides sewerage treatment to most residents. During a disaster event involving high rainfall, the sewerage treatment plants can experience higher levels of effluent than normal. Additionally, there is the risk of power outages during any type of event. The sewerage treatment plants can be without power for 12-24 hours before there is a major issue. The Yeppoon Sewage treatment plant and Emu Park Sewage treatment plant have an onsite generator for backup power. Residents not within the sewerage network have septic tanks which they are responsible for maintaining.

Power

The electricity is supplied by Energy Queensland via their infrastructure of above and below ground lines. Historically there have been power outages during events of up to 5000 customers but these were resolved within 12 hours as an Energy Queensland depot is located in Yeppoon, which allows for a quick response time.

Supplies

The transportation of supplies in Livingstone Shire is mainly via road. Alternatively, supplies could be sourced by sea through Gladstone Port to Rosslyn Bay or by air.

Fuel Storage, Ice and Gas Supplies

Yeppoon
- BP, 7 Fairfax Court, Hidden Valley
- Lammermoor Seabreeze Servo & Takeaway, 150 Scenic Highway, Lammermoor
- Puma, 23 Park Street, Yeppoon
- Shell, 6 Burnett Street, Yeppoon
- Mobil Fresh Trading Co, 1 Homemaker Drive, Yeppoon
- Caltex Woolworths Yeppoon, 2 Hoskyn Drive, Hidden Valley, and
- United Petroleum (Pie Face), 101 Rockhampton Road, Yeppoon.

Rosslyn Bay
- Caltex, Vin E Jones Memorial Drive, Rosslyn.

Yeppoon Road
- Ampol (The Oaks), 2050 Yeppoon Road, Bondoola.

Marlborough
- Puma Marlborough, 71209 Bruce Highway, Marlborough; and
- Puma Marlborough North, 13 Perkins Road, Marlborough.

Byfield
- Byfield Store, 2234 Byfield Road, Byfield.

Emu Park
- Puma, Corner Connor and Hartley Street, Emu Park; and
- BP, 38 Patterson Street, Emu Park.

Yaamba
- Choice Yaamba, 64817 Bruce Highway, Yaamba.

Cawarral
- Choice Cawarral, 685 Cawarral Road, Cawarral

Stanage
- Plum Tree Store, 39 Banksia Road, Stanage

Ogmore
- Shell Ogmore (Tooloombah Creek Roadhouse), 74833 St Lawrence Road (Bruce Highway) Ogmore

7.1.1.8 Queensland Police Service

The QPS maintain an operational presence throughout the Shire including:

- Yeppoon Police Station is located at 17-23 Normanby Street, Yeppoon
    - This police station's front counter operates from 8:00am to 3:30pm, Monday to Friday Yeppoon Police Station is also a 24 hour station, with operational police rostered 24 hours a day, every day of the year.. Yeppoon Police station also house Yeppoon Criminal Investigation Branch
- Emu Park station is located in Pattison Street, Emu Park
    - A 4 officer station, working on an on-call basis outside of roster times
- Yeppoon Water Police is located at John Howes Drive, Rosslyn Bay
    - 4 officers allocated to Yeppoon Water Police working on an on call basis outside of roster times, and
- Marlborough Station is located at Milman Street, Marlborough
    - A 1 officer station with this officer working on an 'on-call' basis outside of roster times.

7.1.1.9 Queensland Fire Department

Rural Fire Brigades within Livingstone Shire Council consist of:

- Adelaide Park
- Barmoya
- Belmont
- Bondoola
- Bungundarra
- Byfield
- Cawarral
- Cooberrie
- Coowonga
- Hidden Valley
- Keppel Sands
- Kunwarara
- Marlborough
- Maryvale
- Nankin
- Nerimbera
- Ogmore
- Stockyard Point
- Tanby
- The Caves, and
- Woodbury.

7.1.1.10 Queensland Ambulance Service

The QAS have three stations in the Livingstone Shire. These stations are located at:

- Yeppoon – Located at a joint complex with QFD and SES at 16 McBean Street, Yeppoon
  - manned 24 hours with 3 shifts. The station services area is Byfield in the north, the causeway in the south, Cawarral in the west and the island groups to the East, and provides as back up to Emu Park Paramedics response capabilities also include crew of the Coast Guard and Police vessels when requested
- Emu Park – Located in Hartley St, Emu Park
  - capability of 24 hours a day 7 days a week with back up from Yeppoon or Rockhampton when required. Response is to The Causeway in the north to Keppel Sands in the west, and
- Marlborough – Located at 25 Milman Street, Marlborough
  - capability of 24 hours a day 7 days a week with back up from Carmila in the north and North Rockhampton to the south. Response area is to St. Lawrence in the north to Stanage in the east, to Princhester in the south and the old Sarina highway in the east.

7.1.1.11 RACQ Capricorn Helicopter Rescue Service

Support for medical evacuations is provided by RACQ Capricorn helicopter which is a Bell 412EP and an AW139.

The Bell 412EP is an American helicopter enhanced twin engine machine equipped with a dual digital automatic flight control system. The Bell 412EP can be configured to have five seats and one stretcher position or three seats and two stretcher positions in the cabin.

The helicopter is equipped with:

- 2 person hoist enabling removal of injured or isolated persons or the insertion of other personnel into difficult to get to areas;
- Trakka searchlight consisting of a variable width beam (4-13 degrees), 22,500 lumens (approx. 30M candlepower). Will light up a 76m diameter area at 1km distance at 40% of peak illuminance;
- Sling capability of around 800kg payload – all pilots are sling endorsed. Ability to deliver relief supplies or equipment into areas where accessibility is difficult. Normal sling rigging as if for crane lift is all that is required for load; and
- Night vision goggle equipped for night/low visibility use – e.g. dark nights, searches etcetera
- Fixed and hand held homing devices for locating distress beacons.

The AW139 is a twin-engine emergency helicopter is equipped with a dual digital automatic flight control system and has multiple seating configuration options to accommodate the specific needs of a mission. reliable, rugged and ready to go 24/7.

The helicopter is equipped with:

- Aircraft tracking technology;
- autopilot;
- Weather radar;
- IFR GPS x 2;
- Communication and navigation radios to enable IFR flight;
- Cockpit voice recorder;
- Flight data recorder;

- Helicopter terrain and warning system;
- Airframe health and usage monitoring system;
- Engine monitoring systems;
- Airframe/ engine vibration monitoring system;
- Rescue winch (250 ft cable/ 270kg (two person)/ variable speed);
- Firefighting bucket capability;
- Night searchlight;
- Night vision device; and
- Beacon homer.

7.1.1.12 Hospitals

The Capricorn Coast Hospital and Health Service is based in Yeppoon at 8 Hoskyn Drive. The public hospital's services include:

- Capacity for 28 beds;
- 24 hour emergency medical services;
- Acute inpatient services;
- Rehabilitation inpatient services;
- Palliative inpatient services;
- Women and family health programmes;
- Midwifery services; including antenatal clinics and classes, postnatal home visiting, breast feeding and parenting support, neonatal and hearing screening;
- Obstetric clinics;
- Child health services; including child development clinics, home visiting and parenting programmes;
- Paediatric clinics;
- School services;
- Hospital avoidance and subacute care in the community; including nursing assessments and care management, medical aids provision, carer support, hospital discharge planning and ongoing support groups;
- Cardiac rehabilitation programmes;
- Social work support and counselling services;
- Indigenous health services; including health assessment and care support, immunisation and hearing screening programmes and health promotion;
- Allied health programmes; including speech, occupational therapy, physiotherapy, podiatry, psychology and dietetic services;
- Mental health programmes; including adult community and child and youth mental health services;
- Alcohol, tobacco and other drugs service; including prevention, early identification and intervention harm minimisation and opiate treatment programmes;
- General practitioner clinic; and
- Radiological services including USS and CT scanning.

7.1.1.13 Medical Centres

- Yeppoon Medical Centre – 19 Hill Street, Yeppoon;
- Yeppoon Family Practice – 48 Normanby Street, Yeppoon;
- Total Health Medical Centre – Shop 11-1 Swordfish Avenue, Taranganba;
- Health Yeppoon – Shop 2/11 Hill Street, Yeppoon;
- Capricorn Coast Hospital and Health Service – 8 Hoskyn Drive;
- James Street Medical Centre – 21 James Street, Yeppoon;

- The Family Practice Emu Park – Corner of Hill and William Street, Emu Park;
- Total Health Emu Park – 20 Pattison Street, Emu Park; and

Note: Some doctors practice out of more than 1 medical centre in the region.

7.1.1.14 Support Agencies

- Centacare – 5/15 James Street, Yeppoon;
- Blue Care – 30 Rockhampton Road, Yeppoon;
- Home Support – 72 Queen Street, Yeppoon;
- Meals on Wheels – 66 William Street, Yeppoon; and
- CQ Home Care – Mary Street, Yeppoon;
- Live Better – 69 Pattison Street, Emu Park.

7.1.1.15 Aged Care Facilities

- Blue Care Capricorn Aged Care Facility – 26 Magpie Avenue, Yeppoon;
- Blue Care Brolga Court – 17-19 Lorikeet Avenue, Yeppoon;
- Blue Care Archer Court – 28 Rockhampton Road, Yeppoon;
- Capricorn Adventist Retirements Village – 150 Rockhampton Road, Yeppoon;
- Bolton Clarke Sunset Ridge Retirement Living – 44 Svendsen Road, Zilzie;
- Oak Tree Retirement Village – 31 Barmaryee Road, Yeppoon; and
- Oak Tree Retirement Village – 3 Kookaburra Drive, Yeppoon.

7.1.1.16 Pharmacies

Yeppoon has 4 pharmacies;

- Yeppoon Day & Night – 4 James Street, Yeppoon;
- LiveLife Pharmacy – Yeppoon Central – 42 Park Street, Yeppoon;
- LiveLife Pharmacy – Keppel Bay Plaza – 64 James Street, Yeppoon; and
- Cooee Bay Pharmacy – Cedar Park Shops - 1 Sword Fish Avenue, Yeppoon.

Emu Park has 2 pharmacies;

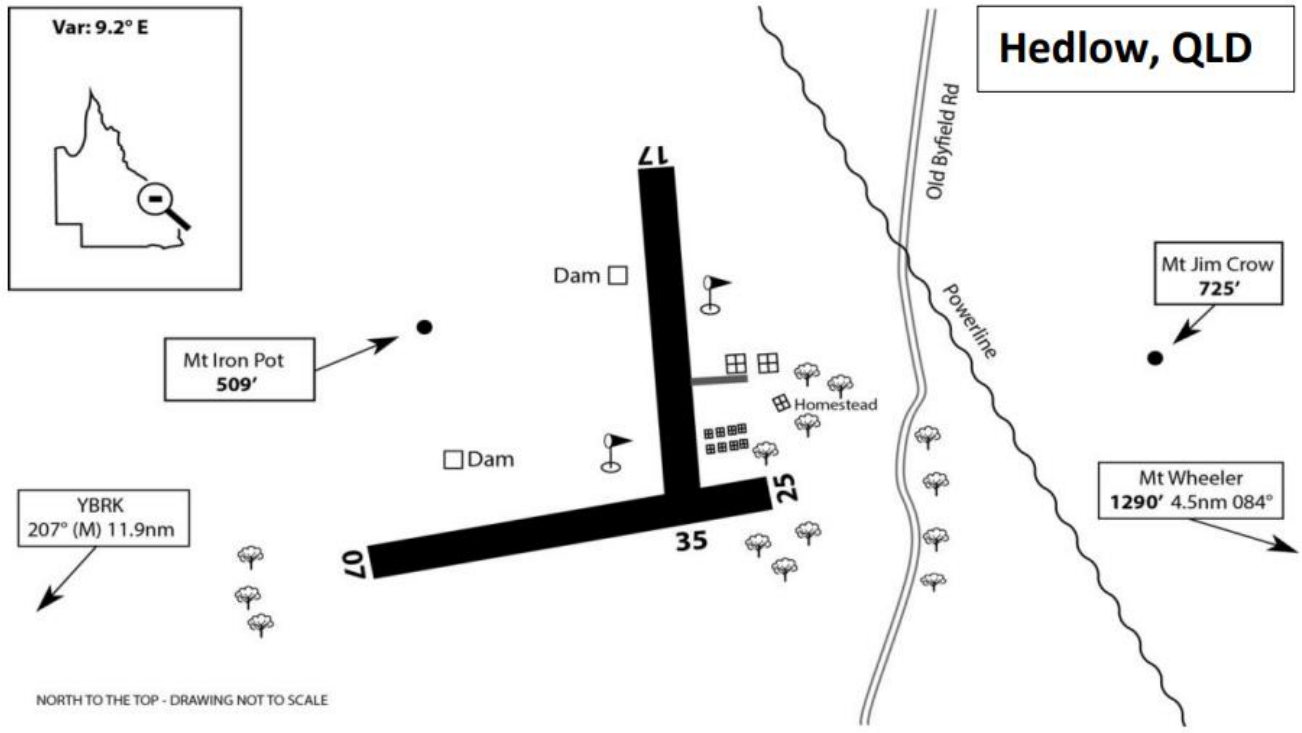
- Star Discount Chemist – 4/5, 16 Emu Street, Emu Park; and
- Zilzie Guardian Pharmacy – 28 cocoanut Point Drive, Zilzie.

7.1.1.17 Airfields

There is no commercial airport within the region. A small airstrip is located at Emu Park and has capability of taking only small light aircrafts.

Name	***Emu Park ALA YEMP***
GPS location	23 15.3 S 150 48.9 E
Evaluation	44ft (13m) AMSL
Runway	16/34
Length	673m
Variation	10E
Runway Type	Natural Grass
Runway Slope	1% slope to S
Runway markings	Cone markers at 30m. Gable markers at 60m
Aircraft suitability	Aircraft not exceeding 2000kg AUW
Windsock	E of Runway approx. centre
Facilities	Toilet and water tank
Night Ops	Nil
Hazards	Caution Unfenced - occasional kangaroos or birds. Often crosswind landing/take-off Powerline well S of runway on salt flats. Drain W of runway

Hedlow Airfield (YHEW) is located at 221 Old Byfield Road, Yeppoon; GPS position is latitude -23.22325 and longitude 150.60201. This is a privately own airfield with two runways; 17/35 and 7/25. Prior permission is required for use of this airfield.



PART 8. HAZARDS

Areas of Queensland are exposed to a variety of natural hazards including floods, bushfires, cyclones and heatwaves. The impact severity of these hazards, results from a combination of local factors, such as geography, condition of the built and natural environment, resilience of the community, as well as organisational management and preparedness. Building resilience, business continuity planning, community engagement and the national disaster resilience strategy contribute to mitigating the risks from hazards.

8.1 Hazard Identification

The hazard descriptions have been taken from the Queensland 2023 State Disaster Risk Report and amended to be Livingstone Shire specific. A hazard and risk assessment study has been completed and incorporates Queensland Emergency Risk Management Framework (QERMF).

8.1.1 Bushfire

Bushfire hazard is the potential fire behaviour characterised by the weather, fuels and topography. A Bushfire Prone Area is land that could support a significant bushfire or be subject to significant bushfire attack. This area includes potentially hazardous vegetation with a medium, high or very high potential bushfire intensity. Bush and grass fires are uncontrolled fires burning in forest, scrub or grassland vegetation that occur where there is a fuel path of sufficient dryness to be flammable. Landscape features such as aspect, slope, wind strength and vegetation type and concentration along with climatic influences such as wind speed, rainfall, relative humidity and air temperature are contributing factors determining the severity of the hazard.

The bushfire season typically extends from mid-winter to early summer. The greatest danger occurs in the period late winter to mid-spring particularly if there has been a good summer wet season that has produced good grass growth and other fuel followed by a winter of low rainfall and lengthy periods of dry westerly winds.

The main areas of bushfire risk in the shire are the urban areas that fringe the bushland areas around the major urban centre of Yeppoon and Emu Park; this is often referred to as the iZone. In the remaining areas, due to its predominately rural nature, there is a threat of bushfires across most of the region. Bushfires cause damage, injury or loss through the action of one or more of their harm-producing components.

Direct flame contact
Exposure to flames is typically only a threat where vegetation or other fuel is allowed to accumulate under, against, or on the exposed building. Similarly, with infrastructure elements, fuel must be present close to the pole, bridge timbers and so on, for it to be affected directly by flames.

Ember attack
Buildings are at risk from wind-blown sparks and embers that can be carried significant distances from the fire front. Embers can also be propelled at great speed by the strong winds generated by the fire and be of a size large enough to smash unprotected windows.

Sparks and embers can enter buildings through gaps such as open or broken windows, or unlined eaves, thus introducing a source of ignition to the interior of the building. Sparks can start small fires in roof spaces, decking timber, curtains, carpets and other interior furnishings. These develop rapidly and if not combated, can destroy the building from the inside. Similarly, sparks can lodge in combustible

material close to, on the roof of, or even under the building, thus causing exterior fires that can quickly envelop the structure.

Radiant heat
Temperatures close to the fire front can be extreme and are capable of progressively causing heat stress, severe injury and fatalities. Radiant heat can cause the more volatile fuels such as synthetic fabrics, rubber and paper, to ignite at considerable distances from the fire front. It can cause glass to shatter; gas bottles to vent; plastics and fibre-glass to melt; metal to lose its strength; and painted surfaces to blister. Radiant heat is also a significant threat to heat-sensitive power supply and other electronic equipment such as computers and telephone equipment.

Strong winds
Wind speeds in excess of 42 metres per second (m/s) (150 km/h) can be experienced in bushfires. Such winds can cause direct damage, such as un-roofing buildings; it can cause impact damage by propelling debris, including burning debris at a considerable velocity; and can cause trees and power poles to be toppled, especially if the fire has already weakened them.

Proximity to the hazard
In measuring the risks posed by bushfire it must be recognised that structures that are some distance from the fire front will be at risk in addition to those that are directly exposed. Ember attack, radiant heat and strong winds, in particular, extend the risk well beyond the fire front.

Smoke
Smoke can produce direct physical effects on people, especially those with respiratory illnesses such as asthma or emphysema, as well as psychological effects. It contains high levels of harmful chemicals such as carbon monoxide and dioxin. Stress and anxiety levels in many people can be raised simply by the smell of fire smoke in the air.

Smoke can also reduce visibility to the extent that roads may need to be closed temporarily to prevent accidents. Dense smoke is also capable of acting as an electrical conductor, with the result that high voltage power lines can arc to the ground through the smoke. This can present a significant hazard to people on the ground and as a further source of ignition remote from the fire front. Dense smoke can also reduce the effectiveness of line-of-sight telecommunications, especially UHF and VHF radio.

Prevention
- Livingstone Shire Area Fire Management Group;
- Byfield Local Fire Management Group;
- Targeted awareness and education programmes;
- Reduce bushfire risk in areas subject to ember attack, radiant heat and flame contact though appropriate town planning, design and construction, and monitoring bushfire protection measures in bushfire prone areas;
- Utilising statutory powers (e.g. the provisions of the *Queensland Fire and Rescue Act 1990)* in relation to total fire bans, notices, permits and the use of fire risk reduction notices;
- Planning developments to be independently safer locations through more rigorous bushfire planning and assessment procedure within the revised planning scheme;
- Providing for bushfire risk reduction adjacent to vulnerable assets through fire breaks and other measures that assist in reducing the consequence of bushfire; and
- Active prevention via hazard reduction burns.

Preparedness

- Community education and engagement to prepare the community in line with the 'prepare, act survive' message;
- Establish and maintain fire breaks;
- Maintenance of firefighting equipment;
- Maintain current database of location of Council plant and equipment;
- Maintain communication interoperability between agencies;
- Training of rural fire brigade (to training standard established by QFD);
- Reduce fuel hazards;
- Hazard reduction (e.g. controlled burns);
- Regular clean-up of yards and gardens;
- Livingstone Shire Area Fire Management Group;
- Byfield Local Fire Management Group; Bushfire Management Strategy (includes Bushfire Management Plan and the Operational Plan); and
- Bushfire hazard mapping.

Response

- Bushfires responded to as quickly as possible by QFD;
- LSC deploy firefighting support resources when required as requested by QFD;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response; and
- LSC Communication Sub Plan.

Recovery

- Community Recovery and Resilience Implementation Plan;
- Recovery and Resilience Taskforces (LDMG subcommittees);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing.

Past Major Fires

- 2019 Cobraball/Bungundarra Fire
- 2018 Mt Chalmers Fire
- 2018 The Caves Fire
- 2017 Shoalwater Byfield
- 2016 Shoalwater Byfield
- 2016 Mount Chalmers
- 2015 Byfield
- 2009 Across Cawarral, Emu Park, Yeppoon, Keppel Sands
- 2003 Cawarral area.

Areas Affected

The areas most affected are generally the heavily timbered areas, horticultural and agricultural areas, rural and rural residential areas and infrastructure.

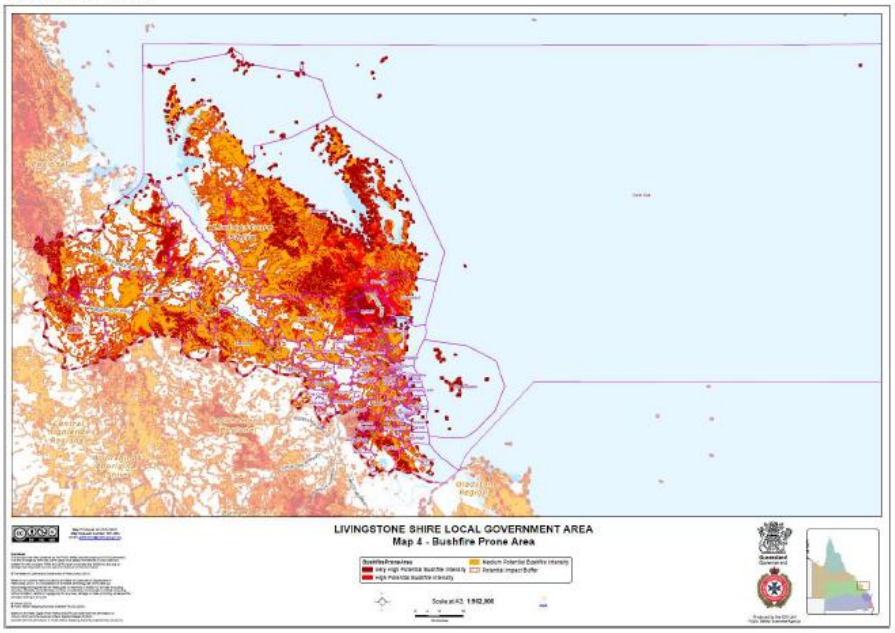
Recurrence

Bushfires may be considered an annual event dependent on seasonal outlooks.

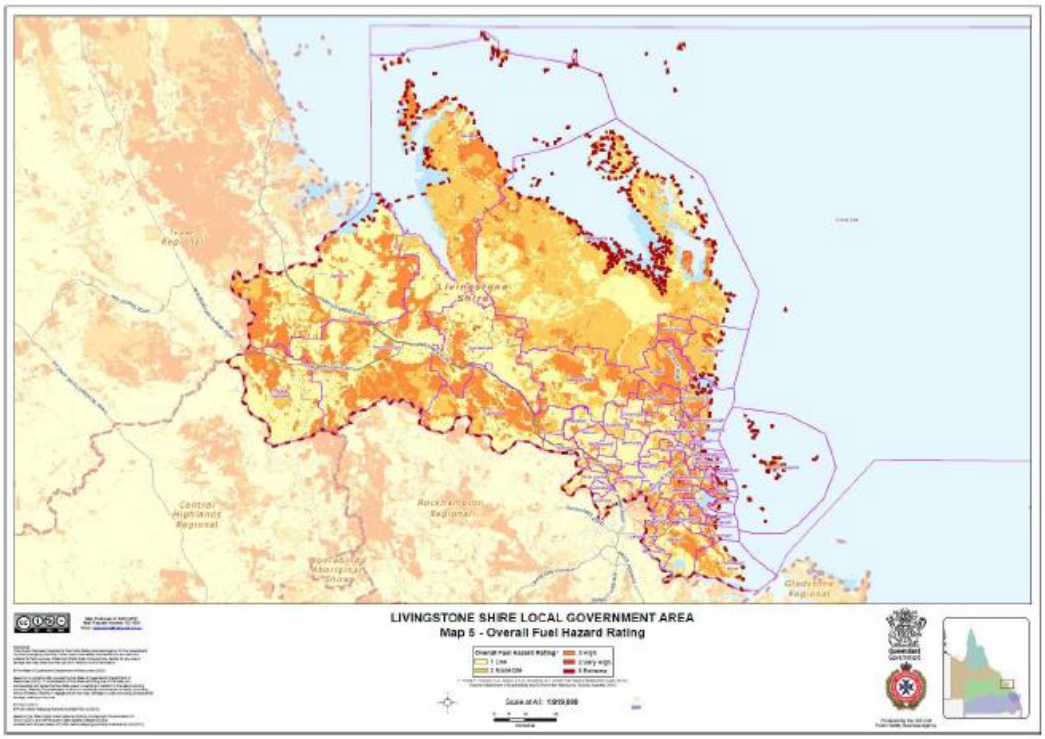
Risk Level
Medium to Very High – This will vary each season dependent on weather conditions and available fuel. Each year the Livingstone Area Fire Management Group will produce a Bushfire Risk Mitigation Plan, based on risks due to fuel load.

Mapping
The bushfire threat is greatest in those areas that border high hazard areas and least where the hazard rating is low.

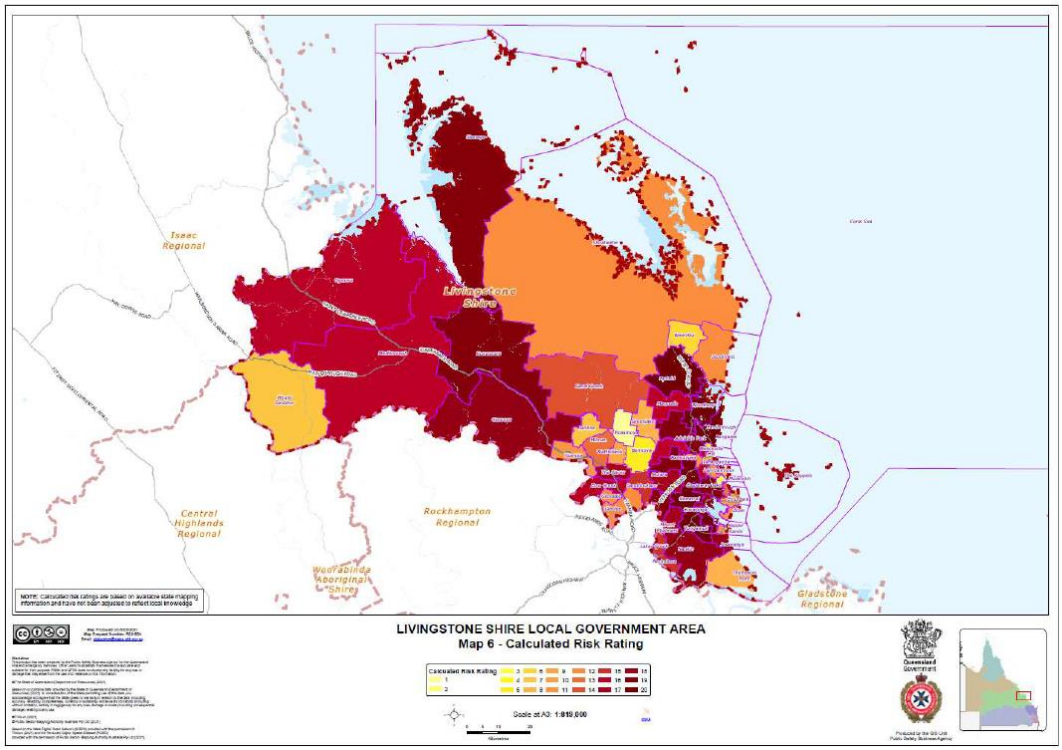
Map 4. Bushfire Prone Area



Map 5. Overall Fuel Hazard Rating



Map 6. Calculated bushfire risk of localities



Annexure J – Bushfire Risk Mitigation Plan 15 January 2022 to 14 January 2023

8.1.2 Tropical Cyclone

Tropical cyclones generally occur in Australia between November to April, with December to March having the greatest incidence. Tropical cyclones generally track down the east coast in a south-easterly direction south of Cooktown. The El Nino and La Nina periods have an effect on the tracks of the tropical cyclones. During La Nina years the systems move closer to the coast and move further south. Tropical cyclones are defined by the World Meteorological Organisation (WMO, 1997) as;

"A non-frontal cyclone of synoptic scale developing over tropical waters and having a definite organised wind circulation with average wind of 34 knots (63 km/h) or more surrounding the centre."

These are very large-scale and intense tropical low-pressure weather systems that form over warm tropical seas Typically, they degenerate rapidly into large rain depressions once they cross the coast. Their destructive capacity is defined by the strength of the winds generated. In Australia there are two measures used – sustained wind (averaged over a ten minute period) and gust (wind speed averaged over three seconds). The Bureau of Meteorology (BoM) tropical cyclone knowledge centre contains the following observation relating to cyclone wind speeds:

Cyclones have gale force winds with wind gusts in excess of 90 km/h around their centre. In the most severe cyclones, gusts can exceed 280 km/h. These winds can cause extensive property damage and turn airborne debris into potentially lethal missiles. It is important to remember when the eye of a cyclone passes over a location, there will be a temporary lull in the wind, but that this will soon be replaced by destructive winds from another direction.

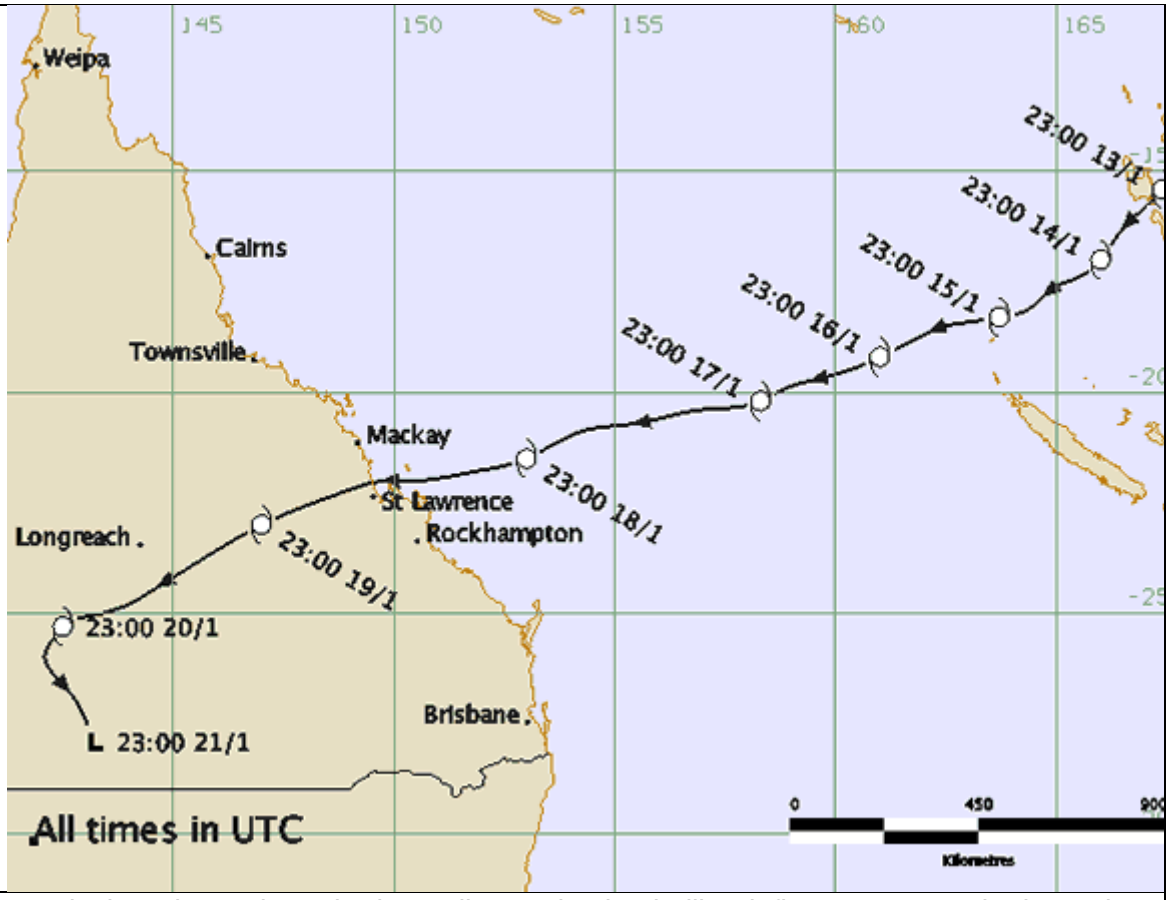
While cyclone advice may refer to a certain maximum sustained wind or gust, there will be localised points where the winds will exceed this value, particularly in gullies, about ridges and between buildings where winds can be funnelled by the landscape. The severity of a tropical cyclone is described in terms of categories ranging from 1 (weakest) to 5 (strongest) related to the maximum mean wind speed as shown in this table.

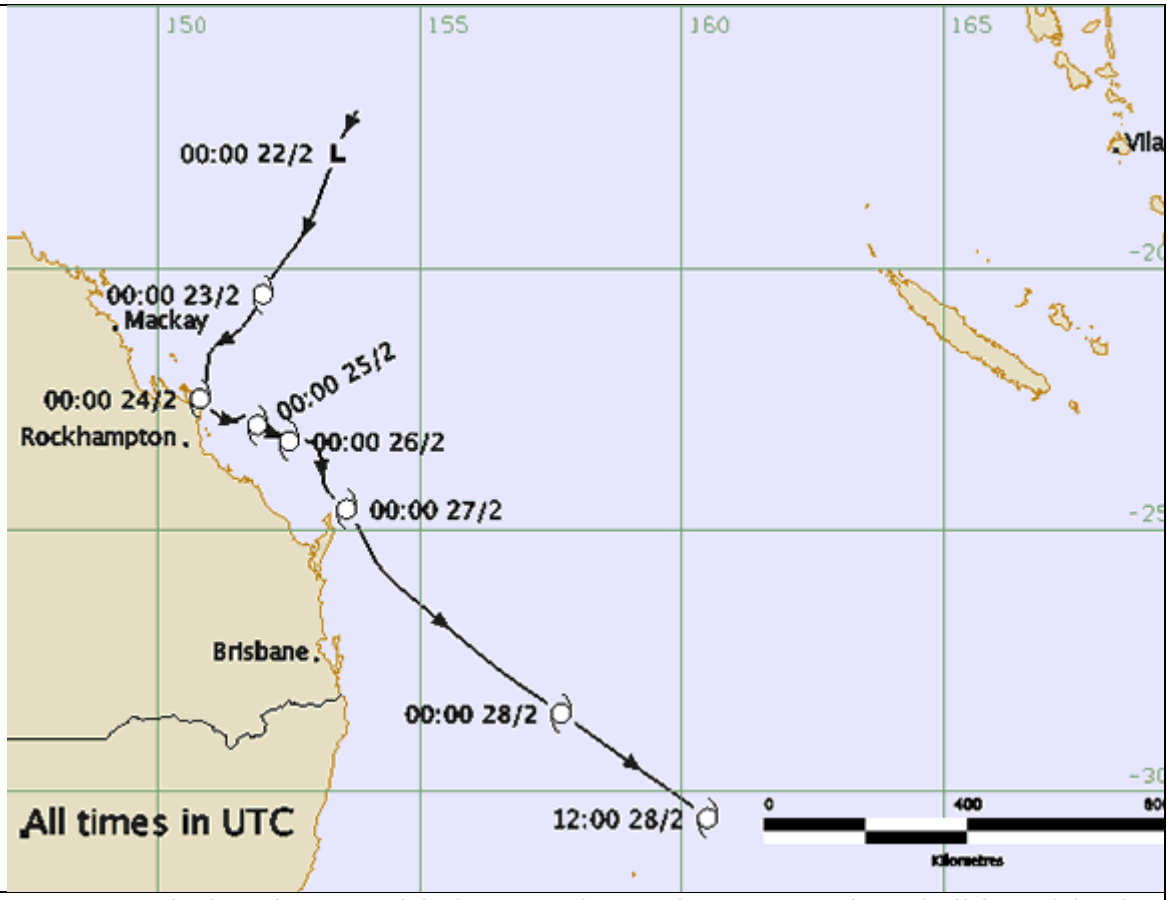
CATEGORY	WIND GUSTS	TYPICAL EFFECTS
1	Less Than **125** Km/Hr	Negligible house damage. Damage to some crops, trees and caravans. Small craft may drag moorings.
2	**125** Km/Hr **TO** **169** Km/Hr	Minor house damage. Significant damage to signs, trees, caravans. Heavy damage to crops. Risk of power failure. Small craft may break moorings
3	**170** Km/Hr **TO** **224** Km/Hr	Some roof and structural damage. Some caravan destruction. Power failure likely.
4	**225** Km/Hr **TO** **279** Km/Hr	Significant roof loss and structural damage. Caravans destroyed and blown away. Dangerous airborne debris. Widespread power failure.
5	More Than **280** Km/Hr	Extremely dangerous with widespread destruction

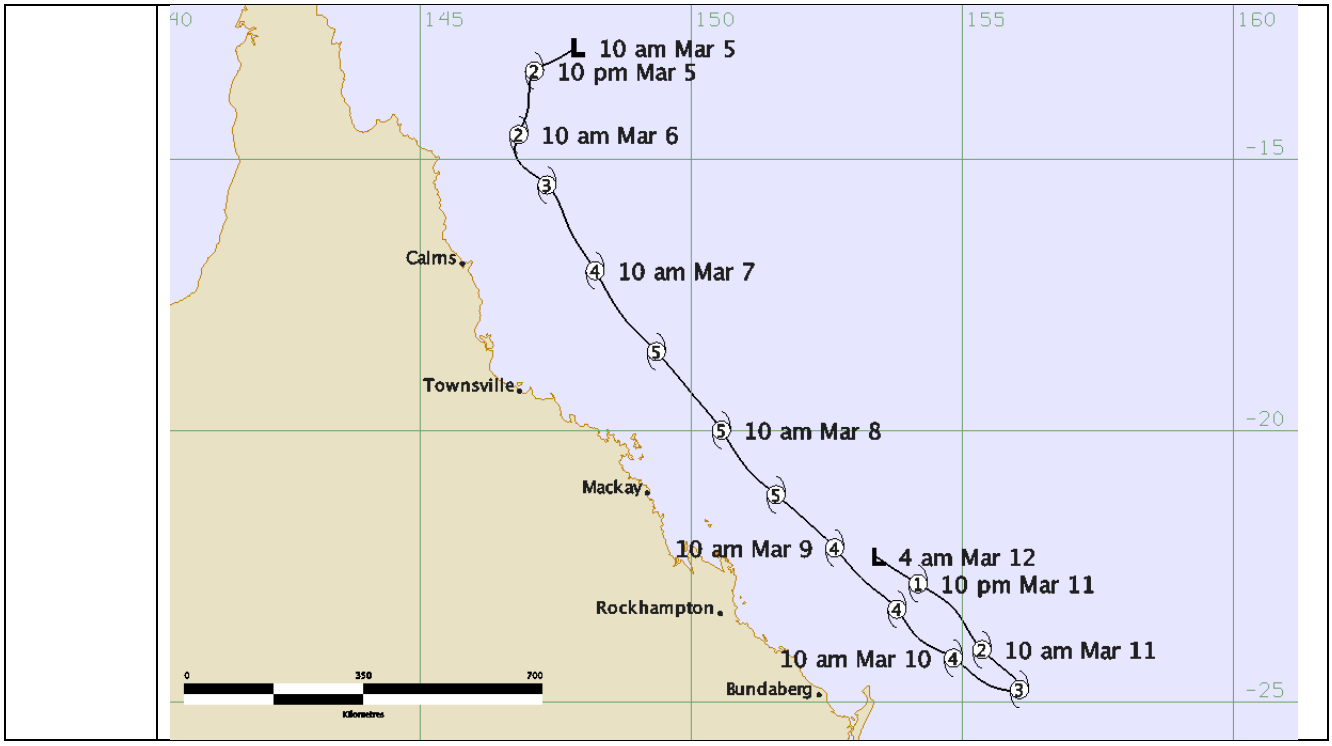
Cyclones of Category three and above are termed ‘severe cyclones’.

The risk of severe damage in the area is high on the Capricorn Coast, as very strong and destructive winds and flooding arising from associated rainfall can occur. The entire coastal area is at risk including Great Keppel, North Keppel and Pumpkin Islands which are popular tourist destinations. Other smaller islands, offering limited protection, have camping grounds on them that may need evacuation, including Middle, Miall, Conical, Divided, Pelican and Humpy Islands. These destinations may have several thousand tourists between them to be considered as part of the emergency response to cyclonic events.

Cyclonic Event	Impact
Tropical Cyclone David (13 – 19 January 1976)	Tropical Cyclone David crossed the Queensland coast just north of St Lawrence (south of Mackay) on 19 January 1976. It passed over Gannet Cay Automatic Weather Station where a central pressure of 970 hPa was recorded. It was intensifying right up to the time of landfall. A feature was its huge size with gales extending from Papua New Guinea down to Lord Howe Island. It generated huge swells, and these combined with large tides caused extensive damage to Heron Island as it passed to the north. Fortunately, it crossed the coast in a sparsely populated area, however winds unroofed 30 buildings in Yeppoon and several in Mt Morgan. Wind gusts reached 95 knots at Pine Islet (Mackay) and 84 knots at Gladstone. Large seas combined with high tides caused considerable damage to breakwaters in the Livingstone area, notably the retaining walls and other structures at Rosslyn Bay Harbour in Yeppoon where the Breakwater was destroyed along with yachts and trawlers. Storm tides flooded houses and shops at Urangan, Noosa and Kirra. At wave recording stations the significant wave (peak) height reached 5.8m at Double Island Point and 3.8m at Yeppoon. Tides were up to one metre above predicted levels.

	
Tropical Cyclone Simon (February 1980)	Tropical Cyclone Simon had a well organised spiralling inflow pattern on both Mackay and Gladstone weather radars as it approached the coast. The central pressure was estimated at 970hPa as it made landfall about 50 km north of Yeppoon on the afternoon of 24 February 1980. However, with the eye half over land the cyclone altered direction and moved back out to sea. For the next two and a half days the cyclone moved southeast about 100 km off the Queensland coast. Simon caused shoreline erosion from Yeppoon to Bundaberg and some minor property damage from Byfield to Gladstone.

	
Severe Tropical Cyclone Hamish (March 2009)	Severe Tropical Cyclone Hamish threatened to track near a number of offshore islands, with associated damaging winds, large waves and elevated sea levels off the east coast of Queensland. It followed a steady south-easterly track but did not make landfall. Evacuations of the Whitsunday group of islands, Heron, Lady Elliott and Fraser Island were organised prior to the potential impact of the system. A 4.5m tide flooded parts of Yeppoon. Damage was estimated to reach $46 million. The most notable damage caused was environmental. Along the cyclone's 500 km track parallel to the Queensland coastline, the eye passed over a substantial portion of the Great Barrier Reef, resulting in some of the worst damage to the area in recent history. Unlike most cyclones which travel from east to west in the region, impacting only a small area of the reef, Hamish moved along the reef for nearly its entire existence. The BoM estimated that about a quarter of the reef was impacted. According to post-cyclone surveys of the reef, the damage done to the coral was extensive, with upwards of 70% losses in the hardest hit spots. Nearly all of the exposed coral was destroyed by turbulent waters. Some areas were completely stripped of all living tissues, leaving only bare limestone. According to preliminary estimates, it would take the reef between eight and fifteen years to recover from Hamish if nothing hampers growth (Trenerry and Ellery, 2009). The Swain sector of the Great Barrier Reef, once considered one of the most densely coral-populated regions of the reef, was nearly completely destroyed by the storm.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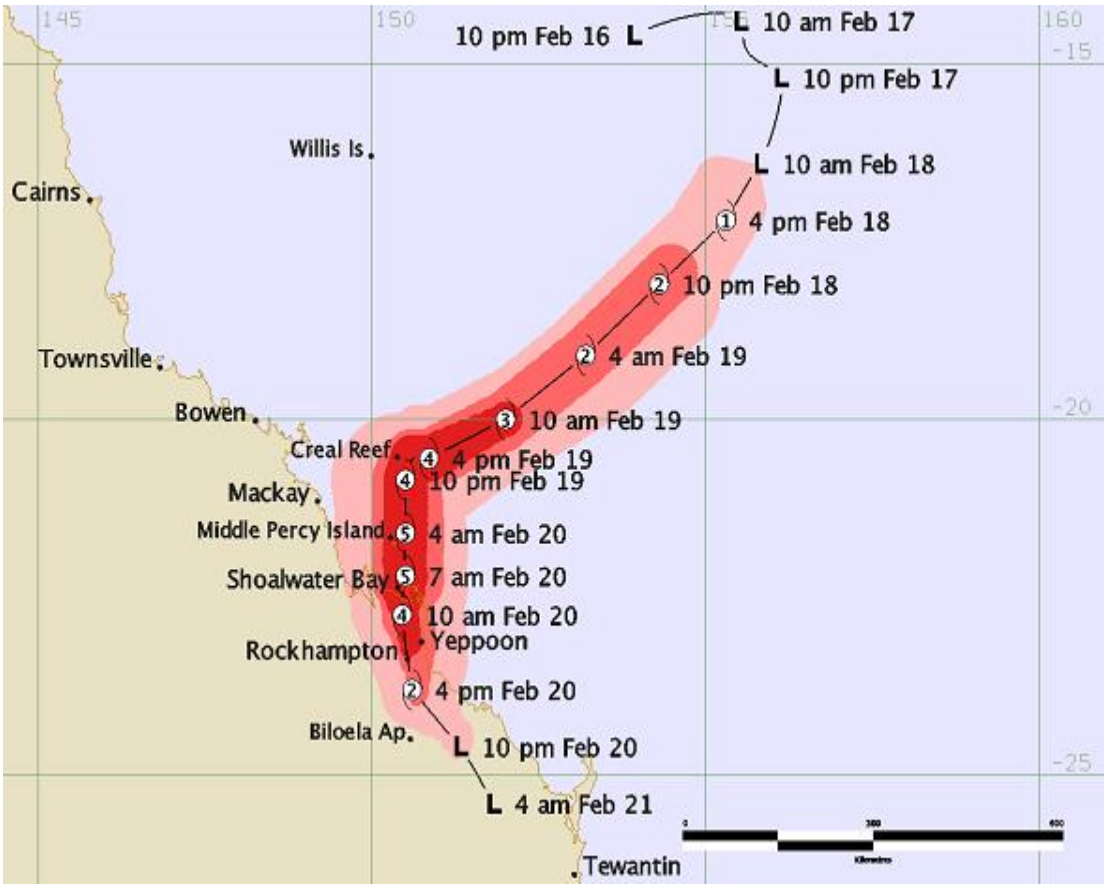
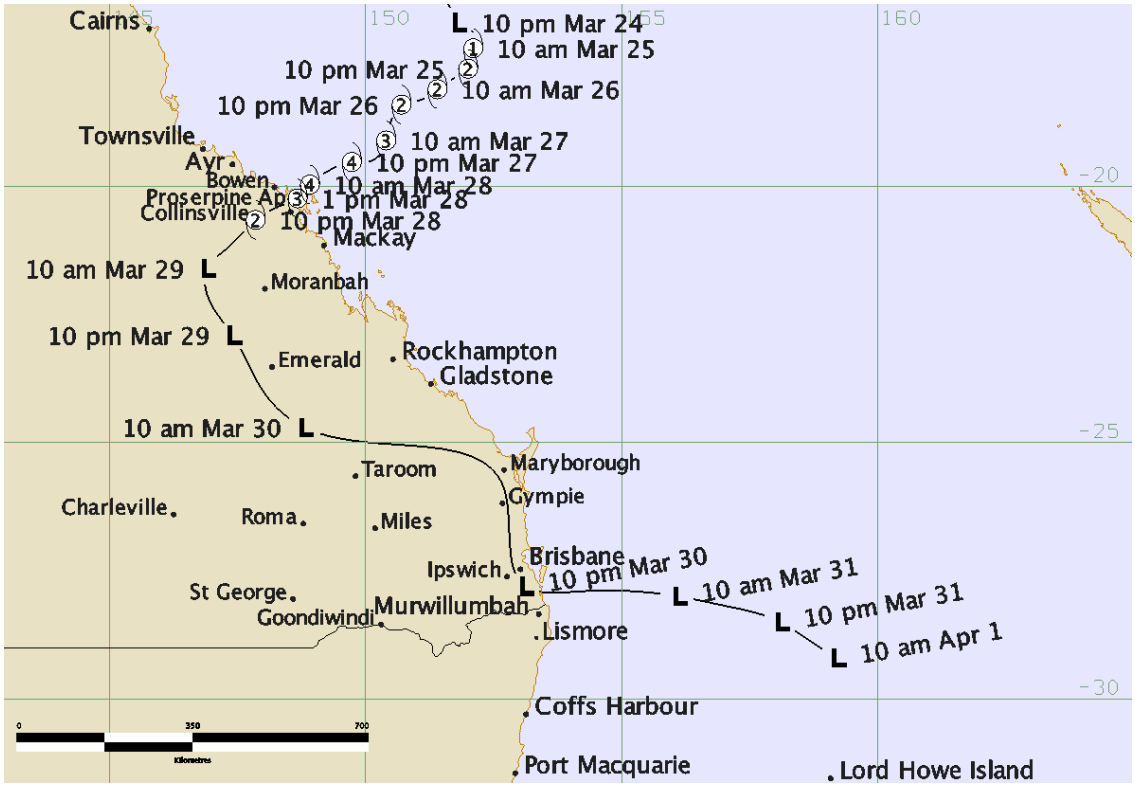
10 am Mar 11
Cairns
Townsville
Mackay
Rockhampton
Bundaberg
0
350
700
Kilometres

Severe Tropical Cyclone Marcia 15 February to 21 February 2015	Severe Tropical Cyclone Marcia made landfall at Shoalwater Bay (north-northwest of Yeppoon) during the morning of 20th February 2015. Marcia crossed the coast at category 5 intensity in a largely uninhabited area, although significant damage was recorded at Yeppoon and Rockhampton as the system weakened after making landfall. The tropical low that eventually became severe tropical cyclone Marcia was first identified in the Coral Sea on Sunday, February 15th 2015. Marcia was tracked over the next few days as it drifted eastward with little change in intensity. During the afternoon of Wednesday February 18th, the low pressure system reached tropical cyclone intensity and was named Marcia, before beginning to move towards the southwest. Tropical cyclone Marcia continued to intensify during February 18th and was estimated to have reached category 2 intensity by that evening. Thursday, February 19th, saw tropical cyclone Marcia continue on a south-westerly track and undergo a period of extremely rapid intensification, increasing by two categories to a category 4 severe tropical cyclone in approximately 12 hours. This increase in intensity is well above the average rate of intensification for tropical cyclones anywhere in the world. Late on February 19th, Marcia made a sharp turn towards the south and intensified even further, and was estimated to have reached category 5 intensity at 4am on Friday 20th February. Prior to landfall in the early hours of February 20th, the automatic weather station on Middle Percy Island recorded a maximum sustained (10 minute average) wind speed of 84 knots (156 km/h) and a maximum wind gust of 112 knots (208 km/h), or the equivalent of a strong category 3 system. This weather station was located to the west of tropical cyclone Marcia's core and would not have experienced the cyclone's maximum winds in its eye-wall. At that time, intensity estimates inferred from satellite imagery indicated Marcia was a category 5 system at its core. High resolution radar imagery shows that Middle Percy Island was located just outside the eye wall of Marcia (represented by the strong reflectivity returns near the centre of the system). Based on all the evidence collected and detailed reanalysis of satellite imagery, severe tropical cyclone Marcia crossed the coast at Shoalwater Bay (north northwest of Yeppoon) as a category 5 system at around 8am AEST on February 20th. Severe tropical cyclone Marcia was a relatively compact system compared to other severe tropical cyclones such as severe tropical cyclone Yasi and weakened quickly as it moved over land during the day. It is believed that only a small part of the coastline within about 15km of the cyclone centre would have experienced category 5 strength winds. As Marcia moved over land, the township of Byfield sustained major damage as did the surrounding pine forest plantations. Yeppoon also received significant damage with the automatic weather station recording a maximum sustained wind speed (10 minute average) of 65 knots (120 km/h), or the equivalent of a category 3 system, as the category 4 centre of Marcia passed to the west. The eye of Marcia passed over the city of Rockhampton where a maximum wind speed (10 minute average) of 40 knots (75 km/h) was recorded at the automatic weather station at Rockhampton Airport. Analysis of radar imagery indicated that the strongest part of the eye wall missed the automatic weather station and it is concluded that parts of Rockhampton experienced winds of high-end category 2 strength. Marcia then turned to the south-southeast and impacted the town of Biloela early that evening, where wind gusts to 85 km/h were recorded. Marcia was downgraded to a

tropical low at 2 am Saturday 21 February, located to the south of Monto. The low tracked further southeast during 21 February and crossed the Sunshine Coast back out to sea at 3 pm 21 February.



Tropical Cyclone Debbie March 2017	March and April 2017 was a significant period of time in Livingstone Shire with three (3) events impacting the region. Commencing on 14 March 2017 information from the Bureau of Meteorology (BoM) was that the possibility of significant rainfall was forecast to affect the area. This manifested over the weekend of 19 and 20 March and continued significant rainfall caused a serious disruption to the community, multiple road closures and the isolation of communities with Byfield receiving 156mm and Yeppoon 128mm on 22 March. This rainfall continued as well as an awareness of a Monsoonal trough becoming evident on 23 March with a 50% chance of forming a Tropical Cyclone over the weekend of 25 and 26 March. On Saturday 25 March Tropical Cyclone Debbie was named. Severe Tropical Cyclone Debbie, a category 4 system made landfall near Airlie Beach on the north Queensland coast at midday on Tuesday, 28 March 2017. TC Debbie was downgraded to a tropical low in the early morning of Wednesday, 29 March when the impact was felt all over the Livingstone Shire with gale force winds recorded on the coast of 116km p/h, rainfall causing localised flooding and dangerous swells. The effects of Ex Tropical Cyclone Debbie continued to be felt for the remaining part of the week with significant rainfall recorded in the northern parts of our Shire and on Thursday 30 March with severe weather conditions still effecting the coast a flood warning was issued for Fitzroy River. On Sunday 01 April 2017 due to the likelihood of an event impacting the Livingstone Shire the LDMG activated and began preparing the community for flooding. Inundation did occur with a peak at Yamba on Thursday 08 April at 16.1m. The LDMG continued to be activated until the transition into recovery on 10 April with deactivation of the LDMG on 18 April. 

Prevention

- Development control including planning schemes;
- Building codes;
- Targeted awareness and education programmes;

Preparedness

- Community education and engagement to prepare the community including identification of risk, safety and evacuations;
- Ensure effective LDMP with buy-in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers;
- Review LDMP and membership;
- Yeppoon Public Cyclone Shelter Management Team Subcommittee; and
- Yeppoon Public Cyclone Shelter exercise and trained staff

Response

- Events responded to as quickly as possible by all agencies;
- Maintain functional SES;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional Business Continuity Plan to ensure capacity to provide resources in the Queensland Disaster Management Arrangements (QDMA);
- Activate Yeppoon Public Cyclone Shelter; and
- LSC Communication Sub Plan.

Recovery

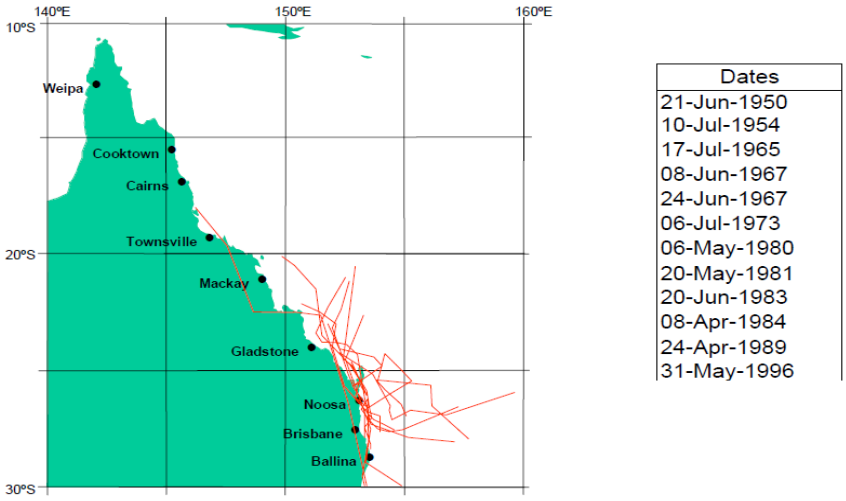
- Community Recovery and Resilience Implementation Plan;
- Recovery and Resilience Taskforces (LDMG subcommittees);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing.

8.1.3 East Coast Low

East Coast Lows, also known as east coast cyclones, winter cyclones or easterly trough lows, are one of a family of low pressure systems which most often develop during the winter months along the east coast of Australia between 25°S and 40°S. These large-scale storm systems often develop rapidly and can become quite intense, with storm force winds extending over wide areas.

East coast lows typically form after a low or deep trough intensifies in the upper atmosphere over eastern Australia. A low pressure system then develops at sea level near the coast to the east of the upper level system, often intensifying rapidly. Like cyclones, effects of these events include flooding, wind damage, storm surge and coastal erosion. East coast lows occur more frequently than cyclones

however the potential impacts on the Livingstone Shire region are expected to be less than those of cyclones. East coast lows generally have much shorter lifetimes than tropical cyclones and last only a few days. They develop over the Tasman Sea close to the coast and can intensify rapidly overnight. Unlike tropical cyclones, where the warm seas provide the energy source, east coast lows are driven by the temperature gradient between the Tasman Sea air and cold air in the high levels of the atmosphere over the continent. They can produce gale to storm-force winds, very heavy rainfall and in some cases coastal inundation. The effects of these storms on coastal and nearby coastal areas can be severe, with loss of life and property from flooding. BoM estimates the loss of life due to east coast lows at 35 between 1973 and 1999.



Selected tracks of East Coast Lows affecting SE Queensland (Harper & Granger 2009).

Prevention

- Development control including planning schemes;
- Building codes;

Preparedness

- Community education and engagement to prepare the community including identification of risk, safety and evacuations;
- Ensure effective Disaster Management Plan with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers;
- Review LDMP and membership;
- Yeppoon Public Cyclone Shelter Subcommittee; and
  Yeppoon Public Cyclone Shelter exercise and train staff.

Response

- Events responded to as quickly as possible by all agencies;
- Maintain functional SES;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional Business Continuity Plan to ensure capacity to provide resources in the QDMA;
- Activate Yeppoon Public Cyclone Shelter; and
- LSC Communication Sub Plan.

Recovery

- Community Recovery and Resilience Implementation Plan;
- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing

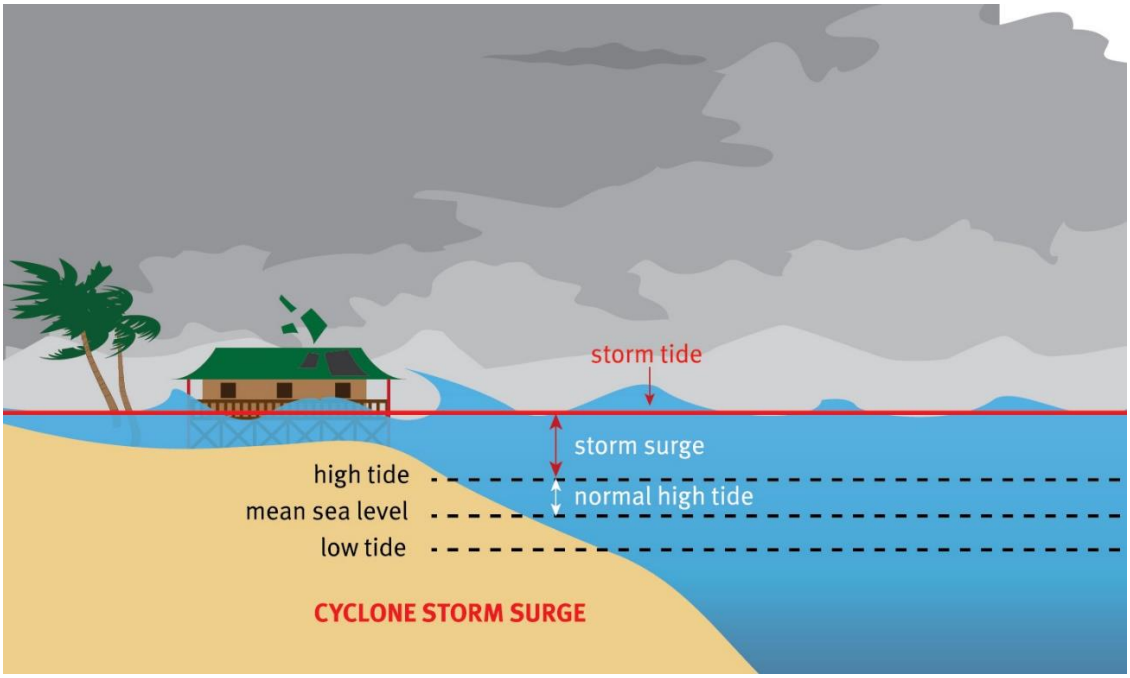
8.1.4 Storm Surge

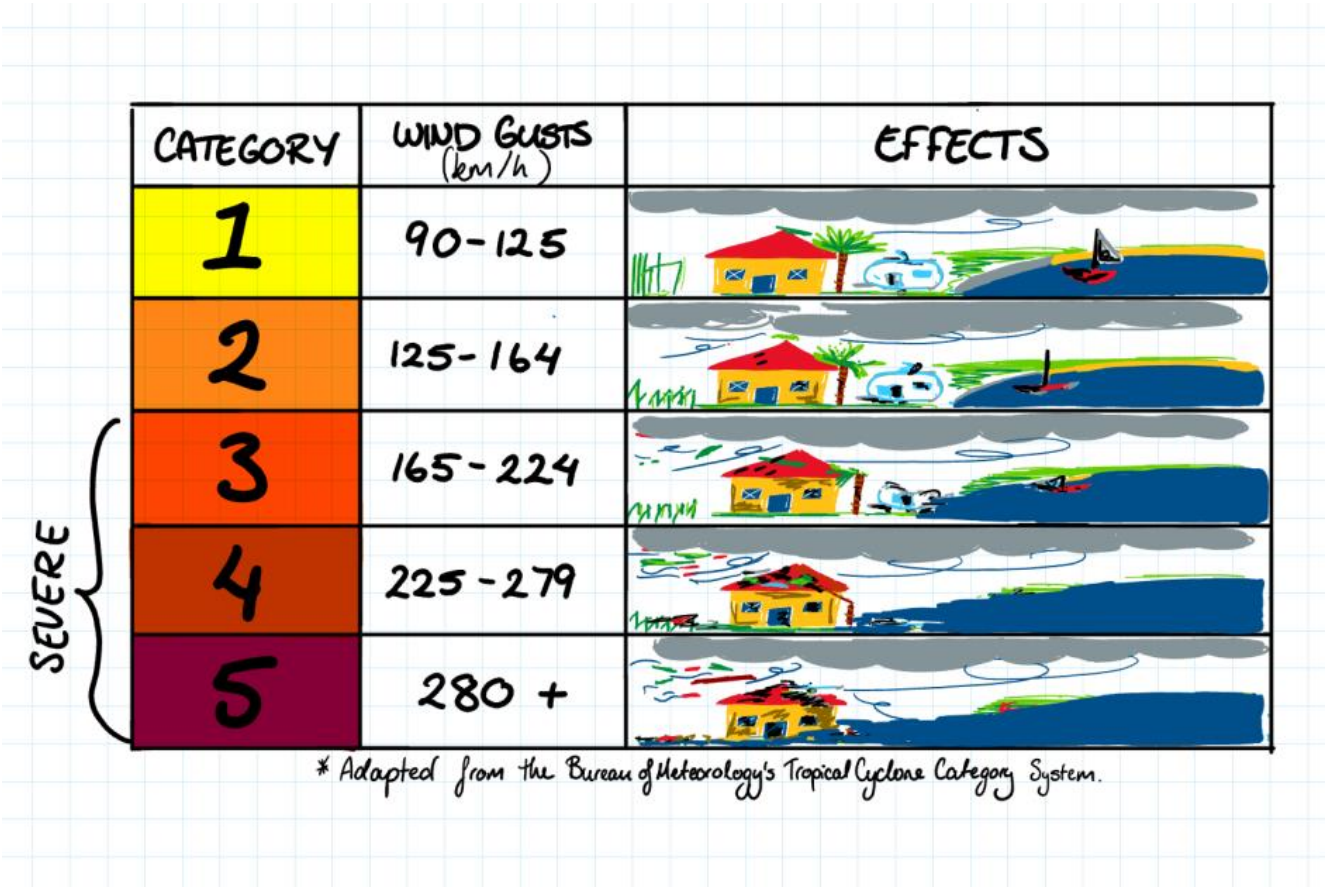
All tropical cyclones on or near the coast can produce a storm surge, which can increase coastal water levels for periods of several hours and simultaneously affect over 100 km of the coastline. The combination of the storm surge with the daily tidal variation produces a combined water level that is called the storm tide.

Storm surge heights are difficult to predict accurately in advance because they are dependent on central pressures and the approach direction of the cyclone at landing. The effect of this surge is dependent on the phase of the tide at which the surge occurs.

Individual storm surges are measured relative to mean sea level while storm tides are measured as a height above Australian Height Datum (AHD), therefore only the storm tide level can be referenced to ground levels. Relatively high water levels result when storm surges are combined with high daily tide levels which could cause inundation of relatively low lying coastal properties.

The following figure shows the various components that make up a storm tide. Storm surge is created by the action of the winds circulating around the eye of the cyclone generating currents in combination with the lower atmospheric pressure that allows the water level to rise. The storm surge adds to the expected tide level at the time the cyclone makes landfall. Wave set up is that component attributable to the swell caused by the wind driven waves. Waves will run up the foreshore and when combined with the rise in sea level will cause the frontal dunes and near shore structures considerable damage. The shape of the coastline, slope of the local bathymetry contribute to the magnitude of the surge. The narrow continental shelf offers some protection against storm surge but places the foreshore to attack from wave set up and high sea levels.





Storm Surge impact. Source: ABC News - https://www.abc.net.au/news/2019-02-20/category-system/10831006?nw=0

Further information regarding storm surge can be sourced from Tropical Cyclone Storm Tide Warning Response System Handbook. The Our Living Coast Livingstone Coastal Hazards Adaptation Strategy demonstrates the changes and impacts our Shire is experiencing now:

Erosion damage to buildings and private properties

Source: ABC, 2014

Narrowing of beaches and loss of sand

Source: Piorewicz, 2002

Limited natural access paths to beaches or loss of access

Source: Zimmer, 2010

Loss of coastal vegetation and natural habitat

Source: The Morning Bulletin, n.d.

Degraded natural systems and changing ecosystems adjoining coastal areas

Source: The Morning Bulletin, n.d.

Dune erosion from large tides

Source: Worldwide Elevation Map, 2020

Damage to road infrastructure and access being cut-off resulting in isolation risk.

Source: The Morning Bulletin, 2017

The Our Living Coast Strategy focuses on the coastal hazards of storm tide inundation and coastal erosion and how these coastal hazards are expected to change under the influence of sea level rise from future climate change. The extent of coastal land potentially impacted by coastal hazards, as well as the consequences of these coastal hazards, are expected to increase into the future.

Our coastal hazard risk today will be different to our future risk. For example, an area not exposed to coastal hazards today may be exposed in the future, therefore the risk to that area increases over time. This is true for locations such as Bell Park, Emu Park Surf Life Saving Club and sections of the Scenic Highway which are not at risk of erosion today, but are expected to be at a high risk in the future (around 2050 and 2100). Residential areas and the caravan park at Keppel Sands are not currently exposed to sea level rise risks today, but will be by 2100.

Storm Surge Tropical Cyclone Marcia

A large storm surge was recorded across the Capricorn coastline, with significant beach erosion and structural damage impacting Great Keppel Island in particular. Fortunately, the storm surge from Marcia along the coast and to the south of Yeppoon coincided with a falling tide and did not produce significant inundation or damage. The state government storm tide gauge at Rosslyn Bay recorded a storm surge of 0.6m producing a storm tide height of only 0.06m above highest astronomical tide (HAT). Highest Astronomical Tide is the highest water level that can be predicted to occur at a particular site under average weather conditions. This level may not be reached every year. HAT at Rosslyn Bay is 5.14m above LAT (Lowest Astronomical Tide) or 2.78m above AHD (Australian Height Datum).

There was however evidence of significant erosion and large deposits of pumice stone indicative of much higher water levels being reached on beaches to the north of Yeppoon between One Mile Beach and Farnborough Beach, and particularly at 9 Mile Beach. The Our Living Coast Strategy, a coastal hazards assessment includes a range of strategic adaptation actions that apply to the whole coast in Livingstone Shire and intended to be implemented over the lifetime of the strategy.

Adaptation actions have been prepared based on short, medium and long-term preliminary priorities which are linked to projected sea level rise and indicative coastal hazard extent mapping prepared for three timeframes - present day, 2050 (0.3m sea level rise) and 2100 (0.8m sea level rise)

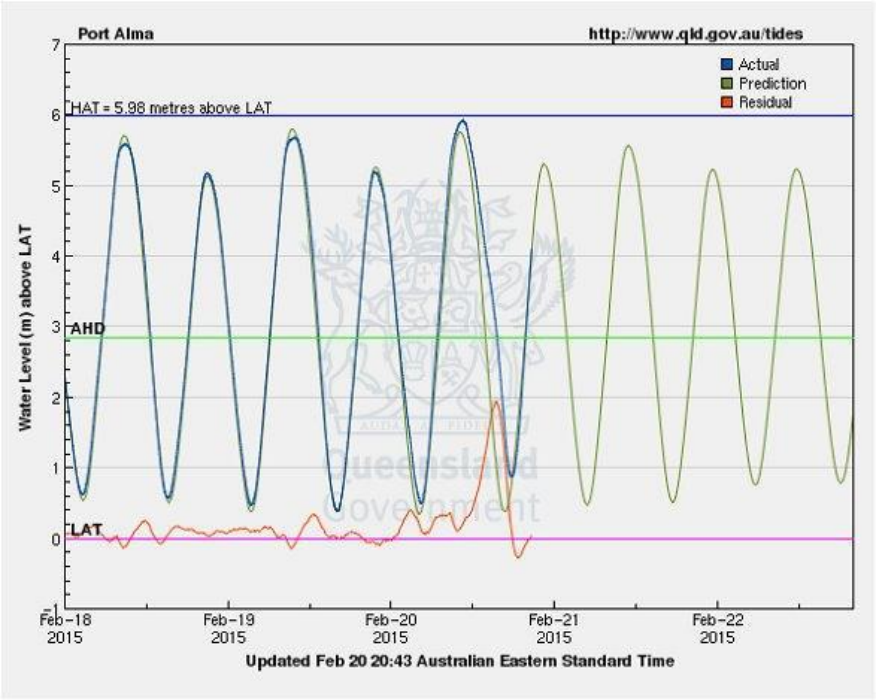
Short-term
Current coastal hazard risks

Medium-term
Coastal hazard risks around 2050 (0.3m sea level rise)

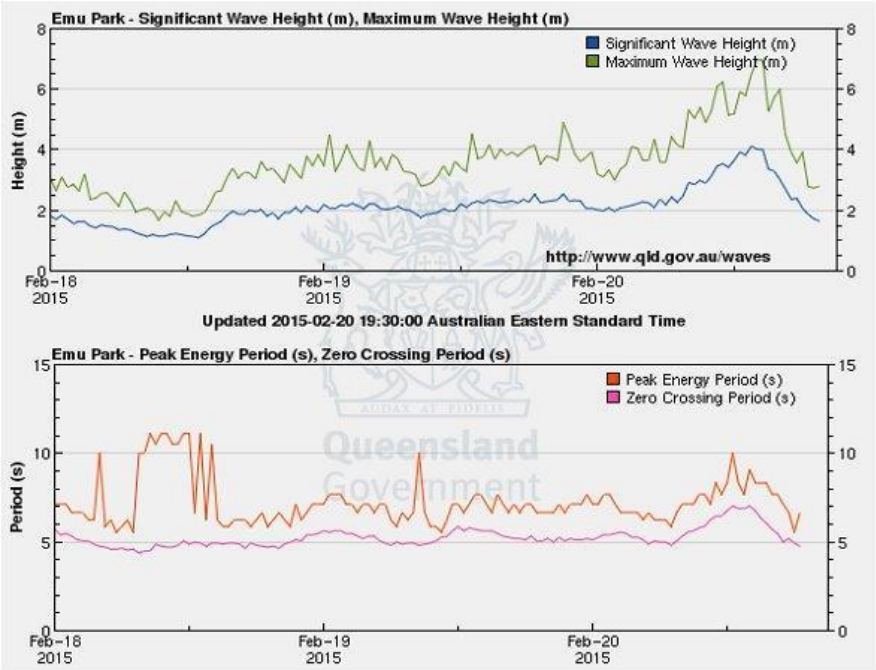
Long-term
Coastal hazard risks around 2100 (0.8m sea level rise)

The state government storm tide gauge at Port Alma observed a storm surge of 2.0m while the wave rider buoy at Emu Park registered a significant wave height of 4.1m and peak height of 7.0 metres with waves coming from the northeast and a peak period of 9 to 10 seconds. The storm tide gauge at Port Alma recorded water levels close to but not exceeding HAT as the surge coincided with low tide. It is believed that the storm surge at Port Alma is likely to have been enhanced by the shape of the coastline relative to the track of the cyclone.

Great Keppel Island holiday cabins toppled onto the beach from severe tropical cyclone Marcia. (Source: ABC News)

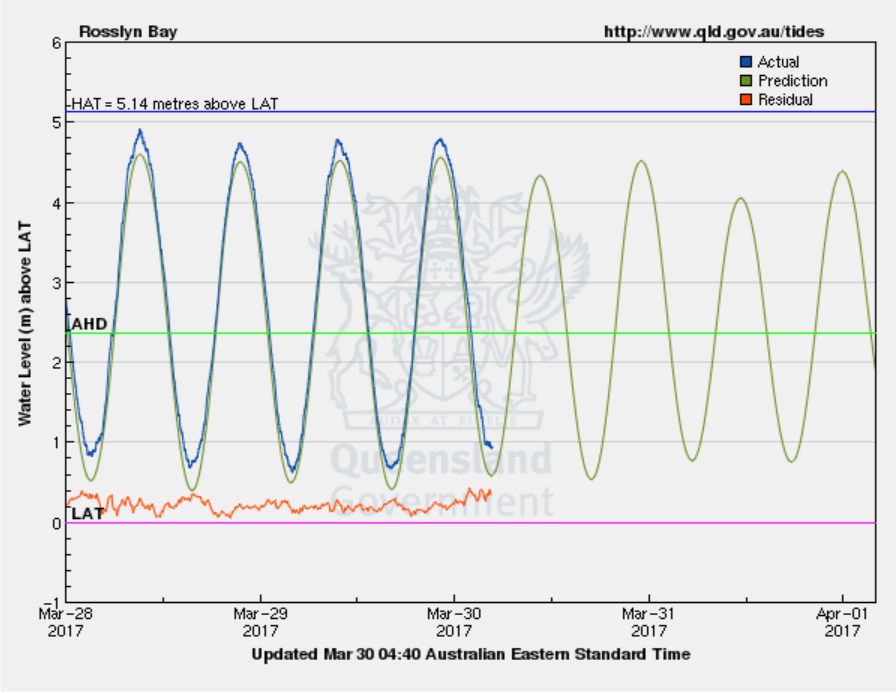


Sea level measurements from the Queensland state government storm tide gauge at Rosslyn Bay (Source: DSITI Coastal Impacts Unit fact sheet 'Severe tropical cyclone *Marcia* : storm tide and wave monitoring data').



Significant wave height and direction measurements from the Queensland state government wave rider buoy at Emu Park. (Source: https://www.qld.gov.au/environment/coasts-waterways/beach/monitoring)

Storm Surge Tropical Cyclone Debbie



Sea level measurements from the Queensland state government storm tide gauge at Rosslyn Bay. (Source: DSITI).

Wave interaction was recorded at Rosslyn Bay due to Tropical Cyclone Debbie. The state government storm tide gauge at Rosslyn Bay recorded a storm surge of 0.4m producing a storm tide height 4.9m, still below the highest astronomical tide (HAT) of 5.14m.

Prevention

- Development control including planning schemes;
- Building codes; and

Preparedness

- Community engagement and education of at risk areas and understanding evacuation routes;
- Ensure effective LDMP with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers;
- Review LDMP and membership;
- Yeppoon Public Cyclone Shelter subcommittee;
- Yeppoon Public Cyclone Shelter exercise and trained staff; and
- Adaptation actions from Our Living Coast – Livingstone Coastal Hazards Adaptation Strategy – Maintain and Improve, Modify and Planned Transition.

Response

- Events responded to as quickly as possible by all agencies;
- Activate Yeppoon Public Cyclone Shelters and places of refuge;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional business continuity plan to ensure capacity to provide; resources in the QDMA;
- Activate evacuation sub plan; and;
- LSC communication sub plan.

Recovery

- Community Recovery and Resilience Implementation Plan;
- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing

8.1.5 Severe Storm

The term ‘thunderstorm’ is a generic description of a relatively small scale convective process which can occur when the atmosphere is moist and unstable. Cumulonimbus clouds then rapidly develop, potentially reaching heights of up to 20km, with associated lightning, thunder, severe wind gusts from down drafts, heavy rain and large hail. Many thunderstorms are typically short-lived (up to an hour) and limited in size (up to 10km in diameter) but can traverse large distances during that time and are capable of inflicting significant damage (Kessler, 1983).

Thunderstorms which produce any of the following are classified as severe in Australia:

- Large hail (2 cm in diameter or greater)
- Damaging wind gusts (90 km/h or greater)
- Tornadoes
- Heavy rainfall conducive to flash flooding

Most thunderstorms do not reach the level of intensity needed to produce these dangerous phenomena. The Bureau of Meteorology only issues severe thunderstorm warnings for thunderstorms that are expected to produce any the above severe phenomena.

The Livingstone Shire area is subject to severe weather, notably severe storms which are not classified as tropical cyclones. Severe storms are localised events, usually affecting smaller areas than tropical cyclones, so their devastating impact is often under-estimated. These storms are more common than any other natural hazard. Each year, on average, severe storms are responsible for more damage and cost to the insurance industry than tropical cyclones, earthquakes, floods or bushfires. Severe storms can be fatal; most deaths are caused by lightning strikes, falling tree limbs, wind-blown debris, flash flooding and the capsizing of small boats in open water. Nationwide, between 5 and 10 deaths and over 100 injuries are caused by lightning strikes alone each year.

Severe storms occur on average 1 to 2 times per summer for the Livingstone Shire area. Although thunderstorms are a valuable source of rainfall, they can cause considerable damage due to the short sharp nature of the event that usually involves high winds, hail and flash flooding. Flash flooding from these events can be quite damaging with the following recorded events being equivalent to 100 year to 150 year average recurrence interval events:

- 25 Jan 2013 – 350mm recorded in Yeppoon;
- June 2002 – 400 mm/hour recorded in Yeppoon;
- 1994 – 600 mm in 56 hours recorded at Yaamba.

Harm-Producing Elements

Destructive Wind

Most of the damage done by severe thunderstorms are caused by their strong winds. The most severe winds, however, are associated with the tornadoes that may be spawned by super-cell thunderstorms. Peak wind speeds in these storms are estimated to approach 450km/h in the largest tornadoes, although actual measurements are sparse. Their spatial extent, however, is small, ranging from just a few tens of metres up to a few hundred metres. Track lengths typically vary from as little as 1km but can extend for over 100km, if conditions are ‘favourable’.

Wind damage tends to increase disproportionately to the wind speed. According to Meyer (1997), winds of 70m/sec (250km/h) cause, on average, 70 times the damage of winds of 35m/sec (125 km/h). Damage tends to start where sustained wind speeds begin to exceed 20 m/sec (about 75 km/h). In addition to the high wind speeds, the turbulence of the winds caused by terrain features and large buildings is also a decisive factor.

Thankfully, the strength of destructive winds from thunderstorms is inversely related to the area they impact. For example, very severe downdrafts (or microbursts) can attain speeds of more than 200km/h and affect areas up to 1km wide, while severe tornadoes might have winds in excess of 400km/h but are typically restricted to widths of less than 100m (Fujita, 1981).

Severe winds can destroy buildings, topple trees, flatten standing crops, bring down debris from wind driven projectiles such as roofing iron and tree branches. No part of Livingstone Shire is immune from severe wind damage.

Hail
BoM records suggest that approximately 30% of all severe thunderstorms produce damaging hail, with actual sizes varying depending on the strength of the recirculating updrafts in the storm system. Hail is solid precipitation in the form of balls or pieces of ice known as hailstones.

Hailstones can form in a thunderstorm with a strong updraught when frozen raindrops, suspended in the updraught, grow rapidly by 'sweeping up' small cloud droplets which freeze on contact. Their diameter can range from 5 to 50mm or even more, but most hailstones are smaller than 25mm. Hailstones larger than cricket balls have been recorded in Australia. The BoM will refer to large hail (2cm in diameter or large) or giant hail (5cm in diameter or larger).

Lightning
Almost all storms produce some lightning and associated thunder. An average thunderstorm produces a few lightning flashes each minute and generates several hundred megawatts of electrical power during its lifetime.

Electrical storms are one of nature's most spectacular displays, but they can also have catastrophic consequences — triggering bushfires, destroying buildings, disrupting air traffic and in the worst-case scenario, causing death. According to the BoM, in Australia lightning accounts for 5 to 10 deaths and well over 100 injuries annually.

The Severe Storm Threat
Severe storms and severe thunderstorms pose a risk to the whole of the Livingstone Shire area. The most widespread threat is from destructive winds that have the potential to cause injuries and fatalities, destroy buildings, dislocate infrastructure and do significant environmental damage. The areas that are most exposed to destructive winds are those along the coastline and those on exposed ridges.

Short duration storms that occur during high activity periods (daylight, end of school day, shopping day etc) offer the greatest chance of damage to life and property. While accurate records are unavailable, damage as a result of such events may extend to personal injury, roof damage, rainwater penetration, power failure losses, consequential flooding losses, infrastructure damage and damage from flying objects.

Damage in rural areas will be localised to the area covered by the storm event and may include personal injury and property damage. Flash flooding again is a consequence and may cause damage to property and Council infrastructure. Fires have been associated with electrical storms in rural and remote areas of the Shire. Severe storms are likely to bring down power and communication lines.

Event Date	Description
7 December 1969	4cm hail at Etna Creek
12 February 1992	3.8cm hail reported at Yeppoon at about 10:20pm
22 November 1992	70 knot wind gusts recorded from a thunderstorm at Great Keppel Island at about 8:30pm
18 December 1995	60 knot wind gusts recorded by Keppel Sands Coast Guard. The storm struck shortly after 5:30pm
21 September 1996	Estimated wind gust of 54 knots at Great Keppel Island. The storm struck shortly after 2pm
1 January 1997	92mm was recorded in an hour at The Caves (estimated ARI between 50 and 100 years) between 3:30pm and 4:30pm.

28 August 1999	Marble to golf ball sized (4.4cm) hail fell at The Caves at about 4 pm
11 December 2001	Widespread thunderstorms occurred over the Capricornia district. 20 cent piece sized (approximately 2.8cm) hail was reported from Yeppoon at about 2pm. Wind gusts were estimated at 80km per hour (approximately 45 knots). Some trees were blown down onto cars in the town
October – December 2006	In Queensland this was the most active thunderstorm season on record. During this three-month period, severe storms with flash flooding, violent winds and sometimes damaging hail, were almost a daily occurrence across eastern Australia. In the Brisbane area alone there were twenty severe thunderstorms; the average is four.
19 April 2020	12cm hail recorded in Yeppoon

Prevention and Preparedness Strategies

Prevention

- Development control including planning schemes;
- Building codes; and
- Adequate private insurance.

Preparedness

- Community education and engagement including periodical clean-up of yards/gardens;
- Ensure effective Disaster Management Plan with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Maintain an effective SES Unit;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers; and
- Review LDMP and membership.

Response

- Events responded to as quickly as possible by all agencies;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional business continuity plan to ensure capacity to provide; resources in the QDMA; and
- LSC communication sub plan.

Recovery

- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing

8.1.6 Tornado

Tornados are the rarest and most violent of thunderstorm phenomena, formed from rapidly rotating columns of air that descend in the well-known funnel shape from the base of a storm cloud. A tornado vortex, which can range in width from a few metres to hundreds of metres, usually rotates clockwise in the southern hemisphere (viewed from above) and contains very damaging winds that may reach more than 450 km/h. Damage associated with tornados is predominately due to the high wind speeds which lift large objects, vehicles and destroy structures. Injuries and death are caused by violent winds and debris slamming into buildings, falling trees and projectiles.

Tornados form from rapidly rising air currents inside a cloud. As it rises higher up in the atmosphere, often to the base of the stratosphere, the air cools and condenses to form classic cumulus and cumulonimbus clouds. Wind shear within the clouds occurs due to the difference between wind speed along the ground and higher up in the atmosphere. A thunderstorm super-cell forms when wind shear reaches 30 to 40km/hour between the surface and about 3,000m up in the air. The wind shear causes air to spin in tube-like rolls along a horizontal axis. The convective updraft of the thunderstorm then sucks this rolling air upwards around a vertical axis to form a tornado. A tornado vortex can be between two and ten kilometres across, gradually narrowing and spinning more fiercely through the super-cell. Only about half of super-cells intensify enough to become tornados on the ground.

The most intense tornado recorded in Australia occurred at Bucca, west of Bundaberg approximately 280 km south-east of Rockhampton, on 29 November 1992. The intensity of the winds created freak effects, such as embedding a picture frame in the wall of a room. Hail the size of cricket balls accompanied the storm.

29 November 1992	A freak storm in Bucca approximately 280km south-east of Rockhampton reported as a mini tornado, ripped through the 40-year-old fire station and left a pile of rubble in its wake.
22 December 1995	A tornado was reported at Mulgildie (QLD), approximately 150km south-east of Rockhampton; twelve homes were partially or completely unroofed, farm sheds demolished and a piggery flattened.
2 November 2000	Severe storm tore a path of destruction through North Rockhampton suburbs, with reports of up to five tornados (evidence of at least one confirmed by the Bureau). Estimated damage bill of $200,000, with widespread tree damage and roofing damage to some houses. Golf ball sized hail was reported in the outer suburbs with wind estimates to about 150km/h, but only 78km/h was measured at Rockhampton airport. A large truck was lifted and thrown approximately 50m.
24 - 26 April 2001	Golf ball sized hail and 70mm of rain was reported from Apis Creek (west of Rockhampton) on the 24th. On the 26th a suspected tornado was reported from Jambin (near Biloela). Damage was confined to a one km track which caused tree damage and 56mm of rain was recorded in 35 minutes.
6 May 2001	Tornado with estimated wind gusts of 75 to 90 km/h occurred in north Yeppoon. Multiple water spouts were also observed in Keppel Bay.
25 November 2005	A tornado was reported at Mulgildie (Qld), approximately 150km south-east of Rockhampton; twelve homes were partially or completely unroofed, farm sheds demolished and a piggery flattened.
7 February 2010	A tornado struck a farm just south of the town of Atherton in Queensland causing damage to corn fields and farm equipment.
20 March 2012	A tornado caused major structural and tree damage in the suburb of Vincent. Windspeed estimated at 160–200km/h from damage analysis. Other suburbs affected were Garbutt, Gulliver, Aitkenvale, and Annandale.

26 – 27 January 2013	Several tornadoes struck the Bundaberg region of Central Queensland on 26 January, associated with the remnants of Cyclone Oswald. The first struck Bargara at 1.00pm (AEST), tearing roofs from buildings, and injuring at least six people. Burnett Heads was struck by three separate tornadoes, at 3.15pm and 6.05pm, and again at 6.30pm. Another tornado crossed the coast at Coonarr and a sixth tornado occurring at Burrum Heads on 27 January, whilst there were unconfirmed reports of a tornado at Bribie Island.

Prevention and Preparedness Strategies

Prevention

- Development control including planning schemes;
- Building codes; and
- Adequate private insurance.

Preparedness

- Community education and engagement including periodical clean-up of yards/gardens;
- Ensure effective Disaster Management Plan with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Maintain an effective SES Unit;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework ;
- Trained staff working in the LDCC including agency liaison officers; and
- Review LDMP and membership.

Response

- Events responded to as quickly as possible by all agencies;
- Issue warnings;
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional business continuity plan to ensure capacity to provide resources in the QDMA; and
- LSC Communication Sub Plan.

Recovery

- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing

8.1.7 Flooding

The BoM uses a three tiered classification scheme that defines flooding as minor, moderate or major at key river height stations. Each classification is defined by the water level that causes certain impacts upstream and downstream of the station. These levels have been determined based on standard descriptions of flood effects (see below), historical data and relevant local information. The classifications are revised from time to time by the Bureau's partner agencies and affected communities.

Minor flooding
Causes inconvenience. Low-lying areas next to water courses are inundated. Minor roads may be closed and low-level bridges submerged. In urban areas inundation may affect some backyards and buildings below the floor level as well as bicycle and pedestrian paths. In rural areas removal of stock and equipment may be required.

Moderate flooding
In addition to the above, the area of inundation is more substantial. Main traffic routes may be affected. Some buildings may be affected above the floor level. Evacuation of flood affected areas may be required. In rural areas removal of stock is required.

Major flooding
In addition to the above, extensive rural areas and/or urban areas are inundated. Many buildings may be affected above the floor level. Properties and towns are likely to be isolated and major rail and traffic routes closed. Evacuation of flood affected areas may be required. Utility services may be impacted.

The primary effects of flooding are physical damage to property, infrastructure, people or livestock and disruption to regular way of life. Flood damage to buildings can be separated into contents and structural damage. The greatest increase in damage to single storey residential buildings, both structural and to contents occurs within the first half metre of over floor flooding. Almost all damage to contents occurs within the first metre of over floor flooding.

There are many creeks throughout the region that could cause localised flooding. Some of these creeks are in residential areas, such as: Ross Creek and Fig Tree Creek in Yeppoon. Flooding in these areas is likely to impact upon houses and business. There are also many creeks in rural areas which may impact upon fewer people but still have widespread impacts. Flooding occurs regularly in rural areas such as Byfield, Stoney Creek and Stanage, Stanage Bay Road is regularly impassable. The short duration of local catchment events makes them harder to predict and more difficult to provide warnings about. Flash flooding is the most dangerous form of flooding and is the most likely to cause loss of life.

Prevention and Preparedness Strategies

Prevention
- Development control including planning schemes;
- Building codes; and
- Adequate private insurance.

Preparedness
- Community education and engagement including if its flooded forget it;
- Ensure effective Disaster Management Plan with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Maintain an effective SES Unit;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;

- Trained Local Disaster Management Group members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers; and
- Review LDMP and membership.

Response

- Events responded to as quickly as possible by all agencies;
- Issue warnings and update road closures to the disaster dashboard
- LDCC and dedicated resources for larger incidents, multi-agency response;
- All agencies workable and functional business continuity plan to ensure capacity to provide resources in the QDMA; and
- LSC Communication Sub Plan.

Recovery

- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia; and
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing.

8.1.7.1 Fitzroy River Flood

The Fitzroy River catchment is the second largest catchment in Australia and because of its size can produce severe flooding on its floodplain following heavy rainfall events as a result of any one of the mechanisms described above. The Fitzroy River catchment includes the Dawson, Mackenzie, Comet, Nogoa, Connors and Isaac River systems and Fitzroy River floods can come from any of these rivers. Large volumes of rainfall in the lower catchment also have the potential to cause flooding. Areas affected include Yaamba, Belmont Research Station (Etna Ck) and Nerimbera within the Livingstone Shire. Flood inundation maps for these locations can be found on Council's website.


Basin Locality
Legend
Automatic rainfall station (RN)
Manual/Daily rainfall station (DN)
Automatic river height station (RV)
Manual river height station (RV)
Forecast site (quantitative)
Forecast site (qualitative)
Population centre (large, medium, small)
River, creek
Major highway
Main road
Basin boundary
Catchment boundary
Dam, lake, water body
Swamp
Note: Base spatial data shown in this map is obtained from Geoscience Australia and Queensland Department of Natural Resources, Mines and Energy.
N
0 10 20 40 60 80 100
Kilometres
Map projection: Geographical Lat and Lon (GDA94)
See Map 130 (A) for more details in the Fitzroy, Issac, and Mackenzie Catchments.
See Map 130 (B) for more details in the Comet and Nogoa Catchments.
See Map 130 (C) for more details in the Dawson Catchment.
Coastal Rivers - South
FITZROY BASIN
Flood Warning Network, as at 30/10/2020
Map produced by Flood Forecasting and Warning Services, Bureau of Meteorology, Brisbane
Australian Government Bureau of Meteorology
© Bureau of Meteorology 2020.
Daily Reporting Rainfall Station
Manual River Station
Telemetry Rainfall Station
Telemetry River Station
FITZROY RIVER
FLOOD WARNING NETWORK
Major Roads
Railway
Revised: Nov 2011
Digital data supplied Geoscience Australia. All rights reserved.

Map 130

Conclusions

Localised flooding is an annual problem which can occur in any month of the year, but flooding is most likely to occur in the months from December through to March.

Prevention and Preparedness Strategies

Short term
- Maintain an effective SES Unit;
- Public education;
- Staff who are conversant with resupply policy and procedure;
- Adequate private insurance.

Medium term
- Town planning.

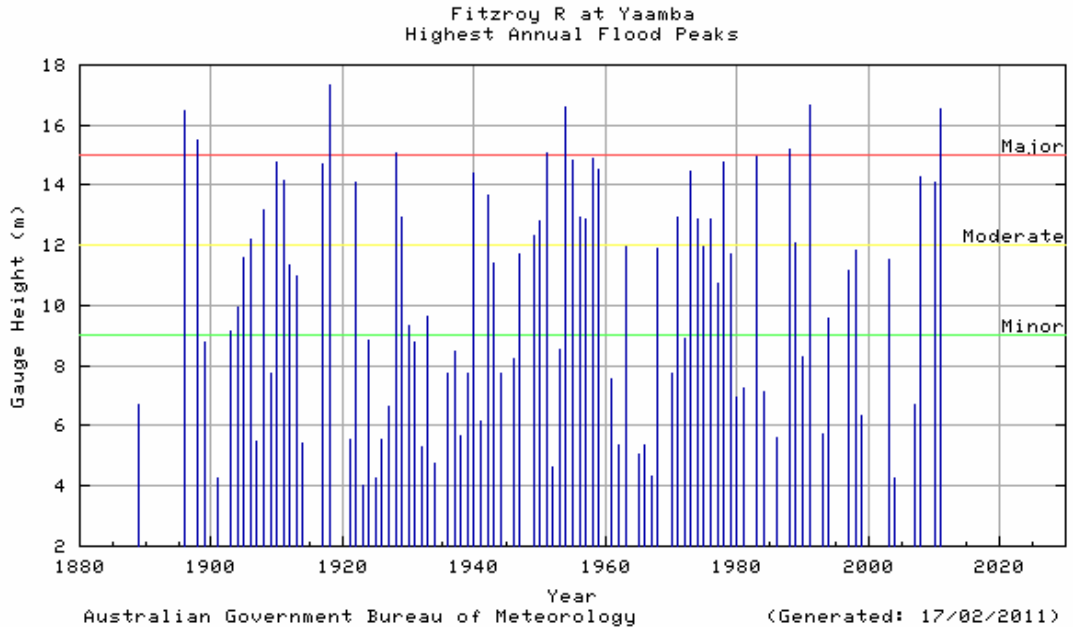
Long term
- Town planning; and
- Upgrade flood affected roads and bridges.

Areas of Significant Risk
- Low lying.

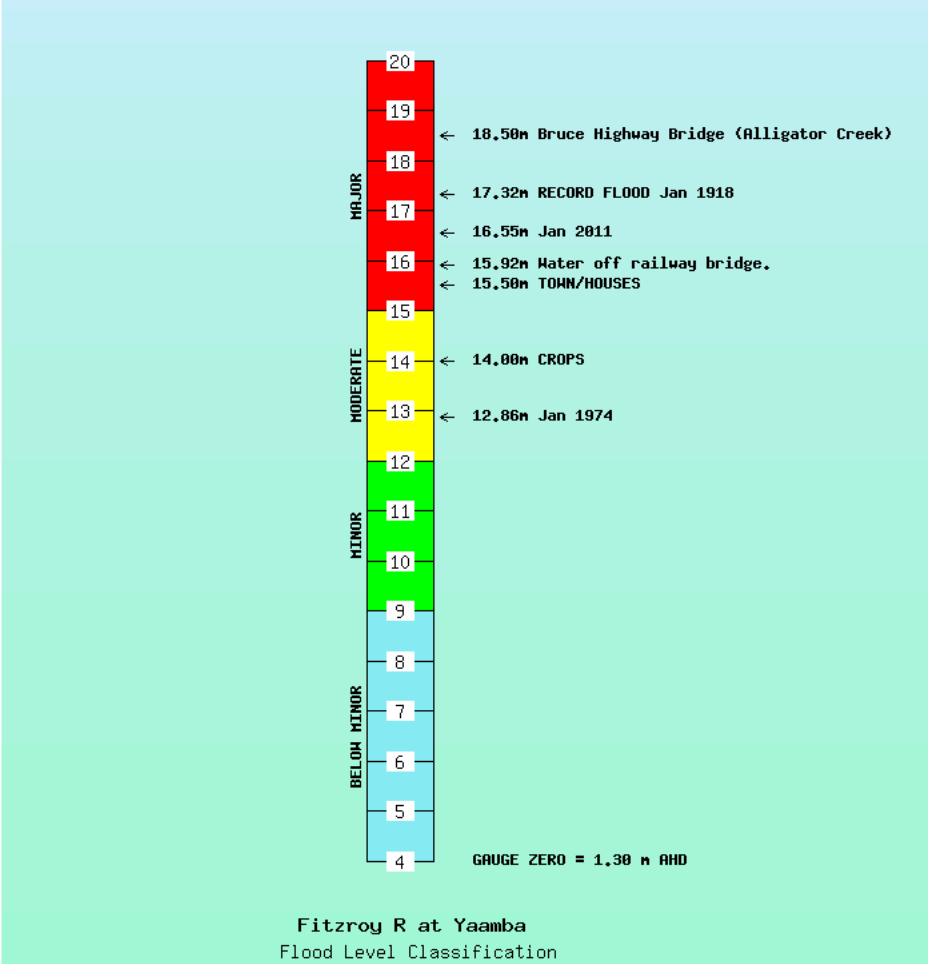
The Fitzroy River has a long and well documented history of flooding with flood records dating back to 1859. The highest recorded flood occurred in January 1918 and reached 17.32 metres on the Yaamba gauge.

Minor: 9 metres
Moderate: 12 metres
Major: 15 metres.

Past Major Floods
- January 2011 Fitzroy River major flood – peaking at 16.55m at Yaamba. Isolated Yaamba and affected 3000 properties in the area
- 2017 Fitzroy River Flood – peaking at 16.1m Yaamba and 8.8m Rockhampton.



Highest annual flood peaks for the Fitzroy River at Yaamba (source BoM)



Flood level classifications and flood effects for Yaamba (Source BoM).

8.1.8 Tsunami

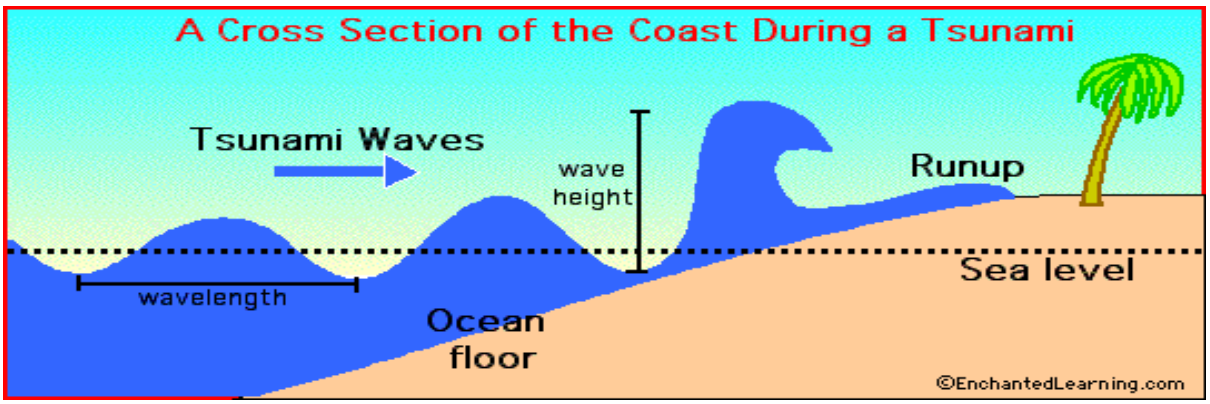
A tsunami is a series of water waves caused by the displacement of a large volume of a body of water. Due to the large volumes of water and energy involved, tsunamis can devastate coastal regions. Events which have the potential to generate a tsunami are, but not limited to:

- Earthquakes;
- Volcanic eruptions;
- Underwater explosions;
- Landslides and other mass movements;
- Meteorite ocean impacts; and
- Any large disturbance above or below water level.

The entire Livingstone Shire coastal area is at risk from tsunami including Great Keppel, North Keppel and Pumpkin Islands which are popular tourist destinations. Other smaller islands, offering limited protection, have camping groups on them that may need evacuation, including Middle, Miall, Conical, Divided, Pelican and Humpy Islands. These destinations may have several thousand tourists between them that need to be considered as part of the emergency response to tsunami events.

Tsunami waves can inundate low lying coastal areas. Tsunami inundation is the horizontal, inland penetration of waves from the shoreline. Flooding can extend inland by kilometres, covering large areas of land with water and debris. When the tsunami reaches the coast and moves inland, the water level can rise many metres. The first wave may not be the largest in the series of waves. Tsunamis may reach a maximum vertical height onshore above sea level, often called a run-up height, of tens of metres. The fast-moving water associated with the inundating tsunami can crush homes and other coastal structures. Regular ocean waves move in the water from the surface down to around 150m deep, but a tsunami moves in the water all the way to the seafloor. Therefore, the volume of water that is moved by a tsunami is significantly more than the amount moved by regular ocean waves.

Tsunami heights are unpredictable and depend on the severity of the event (earthquake, explosion etc.) which triggers the tsunami. Severe tsunamis cause extensive damage and devastation.



8.1.9 Pacific Tsunami Warning Centre (PTWC)

In the deep ocean, a tsunami has a small amplitude (less than 1m) but very long wavelength (hundreds of kilometres). This means that the slope, or steepness of the wave is very small, so it is practically undetectable to the human eye. However, there are ocean observing instruments that are able to detect tsunamis.

Tide gauges measure the height of the sea-surface and are primarily used for measuring tide levels.

Most of the tide gauges operated by the Bureau of Meteorology's National Tidal Centre are SEAFRAME stations (Sea Level Fine Resolution Acoustic Measuring Equipment). These consist of an acoustic sensor connected to a vertical tube open at the lower end which is in the water. The acoustic sensor emits a sound pulse which travels from the top of the tube down to the water surface, and is then reflected back up the tube. The distance to the water level can then be calculated using the travel time of the pulse. This system filters out small-scale effects like wind-waves and has the capacity to measure sea level changes within 1mm accuracy.

The DART System

In 1995 the National Oceanic and Atmospheric Administration (NOAA) began developing the Deep Ocean Assessment and Reporting of Tsunamis (DART) system. An array of stations are currently deployed in the Pacific Ocean. These stations give detailed information about tsunamis while they are still offshore. Each station consists of a sea-bed bottom pressure recorder which detects the passage of a tsunami (the pressure of the water column is related to the height of the sea-surface). The data is then transmitted to a surface buoy via sonar. The surface buoy then radios the information to the Pacific Tsunami Warning Centre (PTWC) via satellite. The bottom pressure recorder lasts for two years while the surface buoy is replaced every year. The system has considerably improved the forecasting and warning of tsunamis in the Pacific Ocean.

Due to the limited warning time for a tsunami (30min, a few hours at the most), it is very important for people to plan and prepare their family or household for a tsunami in advance.

Australian Tsunami History

Large tsunami are rare and have been triggered by volcanic eruptions or earthquakes. The table below shows the last 30 years of tsunami recorded.

Date	State	Location	Details
May 8, 1986	NSW	Aleutian Islands	
May 23, 1989	NSW, TAS	Macquarie Island	
October 19, 1989	NSW	California, USA	
June 3, 1994	WA	Java	Fish, rocks and coral carried two to three hundred metres inland along parts of the coastline near the Northwest Cape.
May 15, 1995	NSW	New Caledonia	
December 26, 2004	NSW, QLD, SA, TAS, VIC, WA	Sumatra	Major Indian Ocean tsunami. 35 people rescued from rip currents, boats damaged in marinas (especially in WA, but also including as far as Tasmania), some limited and localised inundation of immediate foreshores in a small number of WA coastal towns.
May 3, 2006	NSW, QLD, TAS, VIC	Tonga	

July 17, 2006	SA, WA	Java	Affected parts of the WA coast particularly Steep Point (WA). Widespread erosion, extensive vegetation damage and several campsites destroyed. Evidence of inundation up to 200 metres inland.
April 2, 2007	NSW	Solomon Islands	Dangerous rips and currents reported at Coffs Harbour
July 15, 2009	NSW, TAS	New Zealand	
February 28, 2010	NSW, QLD, TAS	Chile	50cm wave at Norfolk Island, 42cm wave at Gold Coast QLD, 29cm wave at Port Kembla NSW, and a 28cm wave at Southport TAS
March 11, 2011	NSW, TAS	Japan	56cm wave at Norfolk Island, 35cm wave at Port Kembla NSW, and a 23cm wave at Spring Bay TAS. Unusual currents noted at Port Kembla and Sydney Harbour. Several swimmers washed into a lagoon at Merimbula NSW

Prevention

- Development control including planning schemes;
- Building codes; and

Preparedness

- Community education and engagement of at risk areas and understanding evacuation routes;
- Promotion and education of the interactive storm tide mapping;
- Ensure effective Local Disaster Management Plan with buy in by all agencies;
- Effective exercise management, including lessons learnt are implemented and the LDMP is updated;
- Emergency alerts saved on the Queensland Disaster Management Portal and tested;
- Maintain communication interoperability between agencies;
- Trained Local Disaster Management members as required by Queensland Disaster Management Training Framework;
- Trained staff working in the LDCC including agency liaison officers; and
- Review LDMP and membership.

Response

- Events responded to as quickly as possible by all agencies;
- Activate evacuation centres and places of refuge;
- Issue warnings including Emergency Alerts;
- LDCC Centre and dedicated resources for larger incidents, multi-agency response; and
- All agencies workable and functional business continuity plan to ensure capacity to provide and resources in the QDMA.

Recovery

- Recovery and Resilience Taskforces (LDMG subcommittee);
- Queensland Reconstruction Authority;
- National Emergency Management Agency;
- Insurance Council of Australia;
- Local/State/Federal – reconstruction of the built environment and the restoration of emotional, social, economic, built and natural environment wellbeing; and
- LSC Communication Sub Plan.

8.1.10 Earthquake

Geoscience Australia states that earthquakes are the vibrations caused by rocks breaking under stress. The underground surface along which the rock breaks and moves is called a fault plane. Earthquakes in Australia are usually caused by movements along faults as a result of compression in the earth's crust.

The size or magnitude of earthquakes is determined by measuring the amplitude of the seismic waves recorded on a seismograph and the distance of the seismograph from the earthquake. These are put into a formula which converts them to a magnitude, which is a measure of the energy released by the earthquake. For every unit increase in magnitude, there is roughly a thirty-fold increase in the energy released. For instance, a magnitude 6.0 earthquake releases approximately 30 times more energy than a magnitude 5.0 earthquake, while a magnitude 7.0 earthquake releases approximately 900 times (30x30) more energy than a magnitude 5.0.

In a broad sense seismic hazard relates to the damage caused by earthquakes, which can pose a threat to infrastructure, buildings, services and ultimately, life. The nature of the seismic hazards can be categorised into:

- Fault rupture;
- Ground shaking;
- Liquefaction of soils including flow slides;
- Induced slope failures; and
- Tsunami and seiche (occurring at sea).

A magnitude 8.6 earthquake releases energy equivalent to about 10,000 atomic bombs of the type developed in World War II. Fortunately, smaller earthquakes occur much more frequently than large ones and most cause little or no damage.

Earthquake magnitude was traditionally measured on the Richter scale. It is often now calculated from seismic moment, which is proportional to the fault area multiplied by the average displacement on the fault. The focus of an earthquake is the point where it originated within the earth. The earthquake epicentre is the point on the earth's surface directly above the focus.

The amplitude of the shaking caused by an earthquake depends on many factors, such as the magnitude, distance from the epicentre, depth of focus, topography, and the local ground conditions. Earthquake effects, as noted by people, are rated using the Modified Mercalli (MM) intensity scale, which ranges from I (imperceptible) up to XII (total destruction).

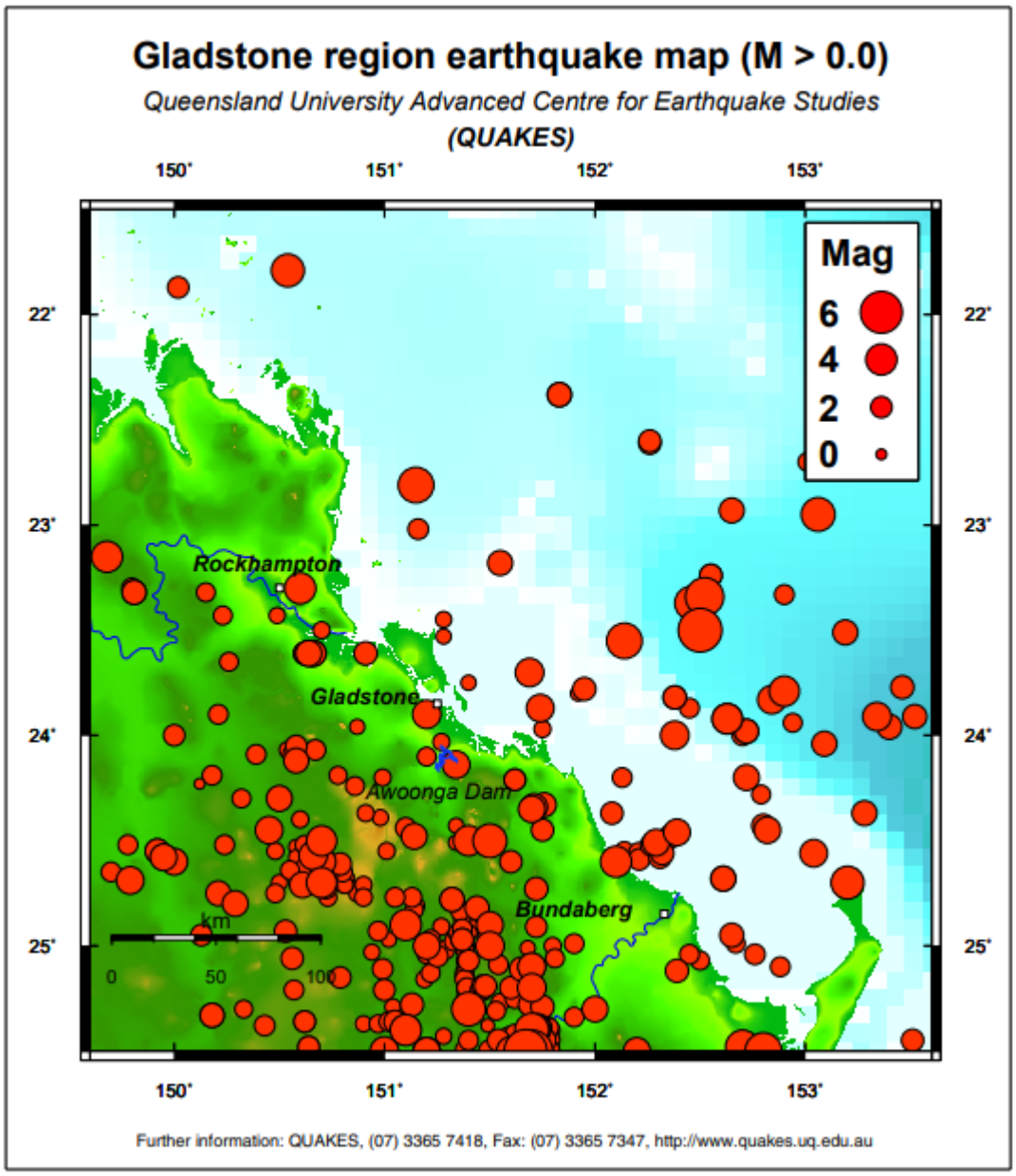
Damage and impact

The impact of earthquakes is dependent on their scale as outlined below.

Magnitude	Intensity and impacts
2.5 or less	Usually not felt, but can be recorded by seismograph
2.6 to 5.4	Often felt, but only causes minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake, serious damage
8.0 or greater	Great earthquake, can destroy communities near the epicentre

Source - https://www.getready.qld.gov.au/understand-your-risk/types-natural-disasters/earthquake

The Queensland catalog contains a total of 409 earthquakes in the Gladstone map region. Arguably the largest earthquake to strike in or adjacent to eastern Australia struck about 135 km offshore Gladstone in 1918 (Richter magnitude estimate of ML=6.3 based on felt area and ML=6.0 based on an instrumental recording). Although the epicentre of the earthquake was offshore, it was felt from Mackay in the north to Grafton, NSW in the south, to Charleville in the west. Damage in the form of fallen chimneys, cracks in walls and broken windows was reported in the Rockhampton region. An offshore Yeppoon 1998 earthquake was strongly felt on Heron Island with one person reportedly being thrown out of bed. During the event in Yeppoon, one resident described his house swaying and creaking on its stilts, windows rattling and water sloshing in the toilet.



Source – The University of Queensland (www.quakes.uq.edu.au/quakeinfo-gladstone.html)

Warnings
It is not possible to predict the occurrence of earthquakes and provide warnings other than broad, regional assessments of the likelihood of occurrence over time somewhere within that region.

Prevention and Preparedness Strategies

Long term
- Public awareness; and
- Adequate private insurance.

8.1.11 Landslip

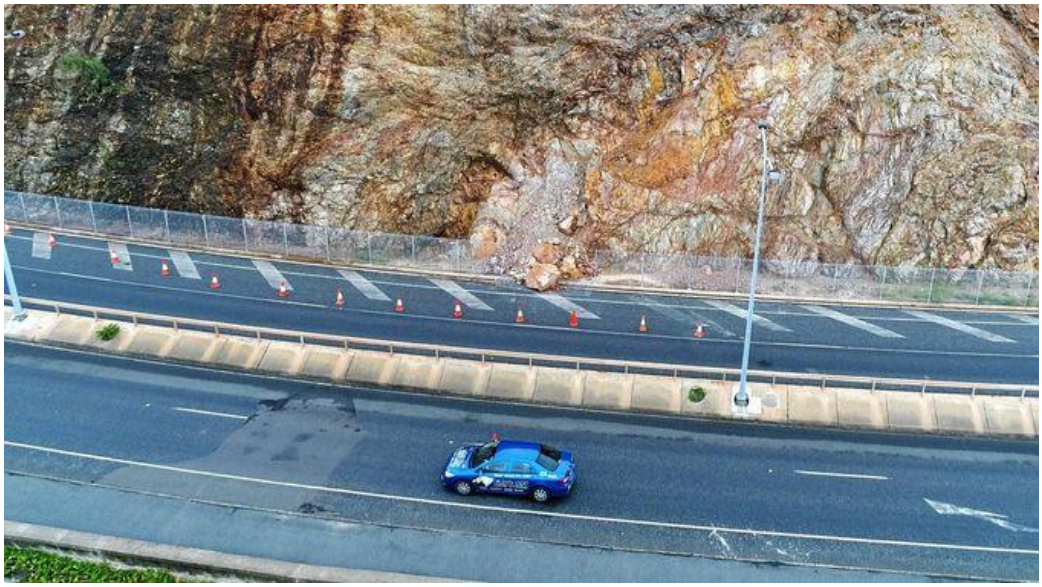
There has not been a landslide assessment study of the area. Whilst landslides in the area are not expected to be a significant problem it should be noted that in Australia, 114 landslides are known to have caused injury or death during the period 1842 to December 2011. At least 138 people have been killed and 174 injured. The naturally-occurring events causing death varied from the fall of a single rock to spectacular debris flows and their flash flood runouts. Many landslides that killed or injured people were the result of human activity. During the period 2000-2011, over half the landslides causing injury or death were directly or indirectly human-caused. Most deaths were caused by trench and beach sand or excavation cave-ins, while most injuries were caused by edge-of-road collapses due to vehicle weight.

Most of the loss has resulted from damage to infrastructure such as roads, railways and water and sewerage systems. Eighty-three landslides throughout Australia are known to have caused damage to a total of over 370 buildings, many of which were destroyed.

Livingstone Shire has had landslips in the past including:

- Gus Moore Street, Yeppoon (2008) – earth movements from underneath a driveway
- Statue Bay (2008 and previous) – Scenic Highway was closed
- Statue Bay (2015) – As a result of TC Marcia, and
- 'Bluff' (2018).

(Statue Bay 2015, The Morning Bulletin 2015,)



("Bluff, Farnborough Road 2018, The Morning Bulletin 2018.)

Warnings

There are no systems or procedures designed to provide warnings of landslide in Australia. Since 2001, however, the BoM Queensland regional office has included statements relating to the possibility of landslide in their severe weather warnings when they anticipate intense rainfall. Such warnings are non-specific.

8.1.12 Heatwave

As defined by the Bureau of Meteorology (BoM), a heatwave is "three days or more of high maximum and minimum temperatures that are unusual for that location". Heatwaves are measured relative to the usual weather in the area, and relative to normal temperatures for the season in that area. Therefore, temperatures that people from a hotter climate consider normal can be termed a heatwave in a cooler area if they are outside the normal climate pattern for that area.

In Queensland, maximum temperatures typically occur between November and February, but days of excessive heat can occur between October and March. Using the threshold for temperature within the top 5% of daily maximum temperatures for a continuous three-day period, at least 18 heat wave events have been identified since 1899 giving an average recurrence interval (ARI) of 5 to 6 years. January is the most common month in which to experience a heat wave episode. Under climate change, projections of heat-related deaths suggest an increase of 1,250 deaths per year by 2070 leading to as many as 8,628 deaths per year by 2100 (Queensland Heatwave Risk Assessment 2019).

The impact of heatwaves extends further than mortality rates. High temperatures are linked to:

- Increased hospital admissions relating to heat stress, dehydration, or as a result of heat exacerbating existing conditions
- Increased rates of certain crimes particularly those related to aggressive behaviour such as homicide
- Increased number of work-related accidents and reduced work productivity, and
- Decreased sports performance.

Most heatwaves in Australia and Queensland are of low intensity, with most people expected to have adequate capacity to cope with this level of heat. Less frequent, higher intensity heatwaves are classified as severe and can be challenging for more vulnerable people, such as those older than 65 years, pregnant women, babies and young children, and those with a chronic illness. Even rarer and

exceptionally intense heatwaves are classed as extreme and will impact normally reliable infrastructure, such as power and transport. Extreme heatwaves are a risk for anyone who does not take precautions to keep cool, even those who are healthy.

Heatwaves can result in significant health stress on vulnerable people. This stress may result in death during the heat event but, in many cases, this can occur well after the heatwave has passed. Deaths during a heatwave may be direct (heat illness) or indirect (heat exacerbating the effects of existing illness or vulnerability). This means it is much harder to identify heat-related mortality until after the event has passed as many people who die during a heatwave have a pre-existing or contributing health condition. In fact, from 1900 to 2010, extreme heat events have been responsible for at least 4,555 fatalities in Australia. This is more than the combined total of deaths from all other natural hazards.

Infographic highlighting the mortality rate of heatwaves against other significant natural hazards within Australia. (Source: Queensland Heatwave Risk Assessment 2019)

Prevention and Preparedness Strategies

Short term
- Public awareness with the inclusion of heatwave preparedness advice.

Medium term
- Data base of air-conditioned facilities; and
- Design improvements to infrastructure to better allow heat management strategies.

Areas Affected
- No area within Livingstone Shire is immune from heatwave conditions.

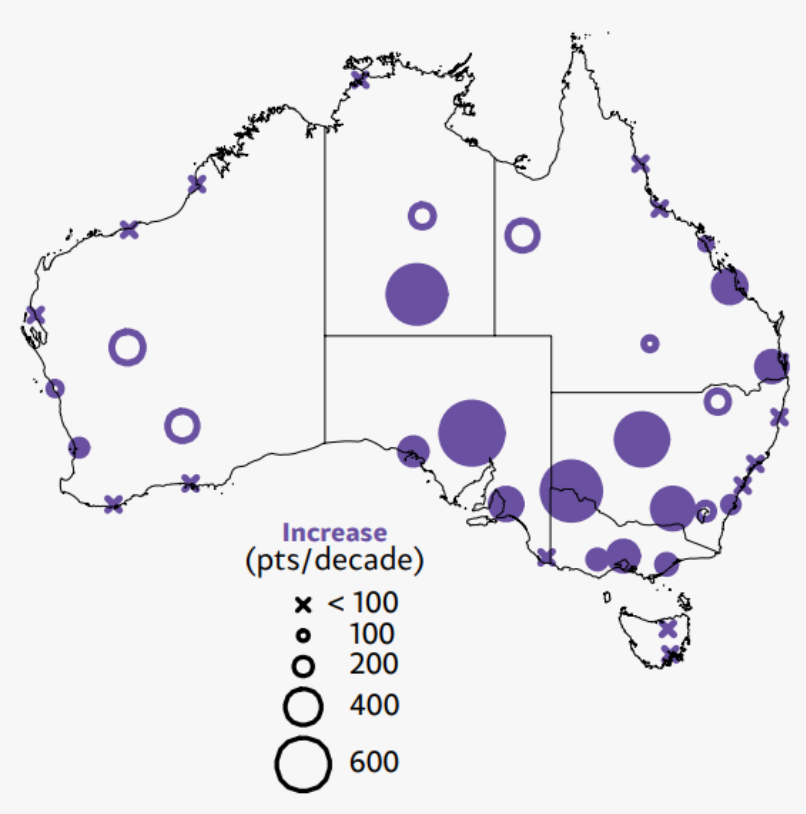
Effects
The combined effect of high temperatures and humidity on human health has already been described. Extended periods of high temperature can also have a damaging effect on most infrastructure elements. Railway tracks can buckle causing trains to either derail or to travel at slow speeds. Road surfaces can become damaged by traffic over softened bitumen.

Most significantly, power supplies can be threatened because of high peak demand for air conditioning and other cooling devices. The loss of power supply will greatly exacerbate the health impact. Similarly, the demand for water will also be greatly increased and the loss of power supply may also compromise the water supply.

8.1.13 Climate Change

Based on the scientific evidence now available, human-caused climate change has already influenced various weather and ocean hazards in Australasia. Scientific research has established that human-caused greenhouse gas emissions are the primary cause of climate change including long term trends such as global warming and rising sea levels. Increasing atmospheric greenhouse gas concentrations into the future will continue amplifying many weather and ocean hazards.

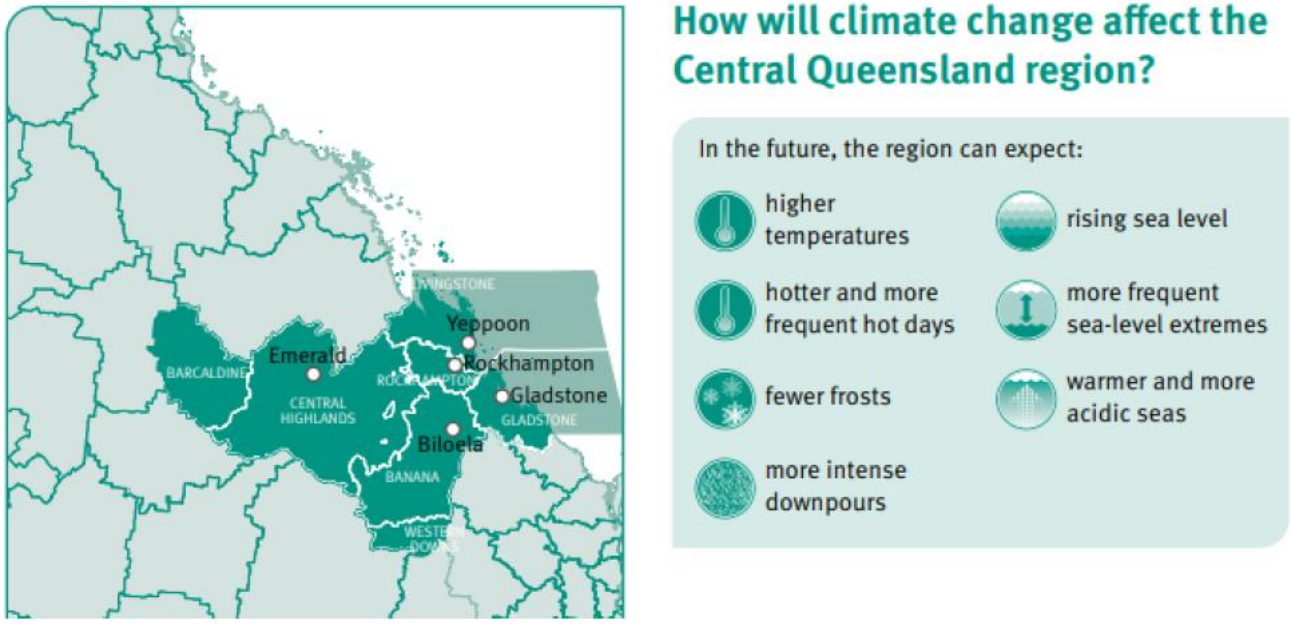
Climate change is increasing the frequency, intensity, duration and distribution of extreme events as shown in the figures below. Disasters are likely to be become larger, more complex, occur simultaneously and impact on regions that have either not experienced natural hazards or at the same intensity and frequency. This is likely to impact the emergency management sector who plays a key role in safeguarding our communities in different phases of disaster management (prevention, preparedness, response and recovery). With increase of frequency and intensity of extreme events, climate change will increase the complexity and demand of services from the sector.



The map shows the trends in average fire weather days (annual cumulative values of the McArthur Forest Fire Danger Index (FFDI)) at 38 climate reference sites. Trends are given in FFDI points per decade and larger circles represent larger trends according to the size code shown below. Filled circles represent trends that are statistically significant.

(Source: www.science.org.au/files/userfiles/learning/documents/climate-change-r.pdf)

Queensland is Australia's most disaster-prone state with frequent occurrence of extreme events floods, bushfires, cyclones, drought etcetera. On an average 4.7 cyclones hit Queensland every year (BOM 2019). In 2017, Queensland had its warmest year on record in terms of mean temperature and mean maximum temperature (BOM 2017). Weekly bushfire frequencies in Australia increased by 40 per cent between 2008 and 2013, with tropical and subtropical Queensland the most severely affected regions (Dutta, Das et al. 2016). Towards the end of 2018 and 2019, severe bushfires damaged parts of Queensland, resulting in damage to property and infrastructure. In order to support affected communities, infrastructure and businesses during these extreme events, emergency and disaster management approaches are likely to become more crucial. Queensland's disaster management arrangement is one of the best in the country, however, the approaches and resourcing associated with these current arrangements may be strained in future by climate change.



Climate change overview for the Central Queensland Region

From Stanage in the north to Fitzroy River in the south, the Livingstone coast has countless picturesque sandy beaches, coastal townships and offshore islands which makes it an ideal tourist destination and place to live. Coastal environments are always changing and being shaped by wind, tides and currents and changing sea levels. Impacts from these natural processes include storm tide inundation, coastal erosion and sea level rise. Referred to as coastal hazards, they can affect our region's natural and built environment, our day to day lives, our community's wellbeing and our economy.

Prevention and Preparedness Strategies

- Drive investment and action through collaboration;
- Improve climate information and services;
- Installation of real time monitoring equipment for intelligence; and
- Assess progress and improve over time.

8.2 Hazard Identification – Non-Natural Hazards

Non-natural hazards are typically due to human involvement and not the environment. The planning and control of these types of incidents is the responsibility of some LDMG member agencies until the impact escalates to a high level therefore requiring the activation of the LDMG and LDCC in support of the lead agency. The plans covering these incidents are developed by the lead agency and interfaced with the LDMP where possible.

8.2.1 Civil Riot

A civil riot is a violent disturbance to public peace by three or more people. With the potential for public demonstrations to be held for varying reasons in Livingstone there is the risk of escalation to a riot. The level of impact would be dependent on the extent and numbers involved. Typically, there would be disruptions to traffic within the area, security risks for any visitors and/or residents, community disconnectedness through lower attendance to events and damage to infrastructure if targeted. Livingstone Shire has a level of political focus due to environmentally significant areas and the presence of the Australian Defence Force in Shoalwater Bay.

8.2.2 Terrorist Attack

World events in recent times demonstrate that terrorism is a credible and serious threat for Australia. Specifically, the Australian Government's counter terrorism security and intelligence acknowledges the interest and intent of terrorists to target mass gatherings and events.

The 2014 Sydney hostage crisis (Lindt Café siege), the 2019 Christchurch attacks, and several complex attempted terrorist attacks in Australia in recent years demonstrate that terrorist attack are a threat to all Australian communities.

Prevention and Preparedness Strategies

Prevention

- Individual agency procedures;
- Review and practice of emergency response plans;
- Crimes Prevention Through Environmental Design (CPTED) including, Closed Circuit Television (CCTV) network, building design, design of public areas, lighting;
- Physical security measures including, protective security measures, access controls, security plans;
- Well-designed communication plans and the provision of information;
- Provision of threat information and protection by QPS;
- Regular review of lead agency counter terrorism plans; and
- Educate the public on the Police Link web site that describes suspicious activity by calling 131 444 or visit https://www.police.qld.gov.au/apps/reports/suspiciousActivities.

Preparedness

- Intelligence (via network police);
- Community awareness (State government programme);
- Identification of risks;
- QPS (and other Agency) training;
- Liaison with Federal Government for protection arrangements; and
- Disaster Management Communication Plan.

Response

- Emergency services response;
- Scientific – QFD;
- QPS – specialists bomb squad;
- QAS multi-casualty plan;
- Queensland Health multi-casualty plan;
- Preservation of evidence; and
- Provision of information to the public (in accordance with Government policy).

Recovery

- Welfare response;
- Support businesses and assist with business continuity;
- Chemical Biological and Radiological (CBR) Contamination to be managed by restrictions/quarantine of the immediate vicinity; and
- Investigation

Areas Affected
- Government facilities;
- Places of mass gathering; and
- Transport sector.

8.2.3 Major Transport Incident

Road
The need for the LDMG to become involved in a road accident would likely only be occasioned by an accident involving a tourist coach, semi-trailer or the like and would be for welfare requirements.

With Great Keppel Island and the tourism to the islands, many tourist coaches traverse the roads from Rockhampton to the Coast as well as along the Bruce Highway. In addition to these coaches, large semi-trailers traverse the highway and cattle floats and timber jinkers are prevalent on most Shire roads. Traffic counts reveal that approximately 20-25% of the Shire traffic is in the heavy category.

Prevention and Preparedness Strategies

Short term
- Maintain effective Emergency Services;
- Driver awareness; and
- Visible police presence on major roadways.

Medium term
- Driver education; and
- Medical and evacuation plan.

Long term
- Reduction of blackspots;
- Regular review of emergency procedures; and
- Improvements to the road network.

Rail
The main northern railway traverses the Shire for most of the length of its area. Passenger trains and heavily laden goods trains travel this line many times a day.

Air
Whilst Livingstone Shire has only one airfield under its control (Emu Park), many private airstrips exist on rural holdings throughout the Shire, as well as the bitumen surfaced private airstrip on Great Keppel Island which is currently not in service. In addition to these strips, there are several air strips within the Shoalwater Bay Army Training Area.

Commercial flights fly over the Shire on the approach and departure from Rockhampton Airport. With these commercial flights, military and private flights etcetera, the possibility of an incident is always present.

Prevention and Preparedness Strategies

Short term
- Maintain the aerodromes; and
- Public awareness.

Medium term
- Provision of adequate fire and rescue equipment.

Long term
- Long term strategies within agency sub-plans.

Areas Affected
All areas of the Shire are vulnerable to aircrafts incidents at various times.

Recurrence
An air accident/incident is considered to be a rare event.

Mitigation
Aviation authorities conduct air safety programmes.

Marine
Several thousand small boats are registered in the Central Queensland area. Most of these vessels are outbound on fishing trips and sightseeing expeditions to offshore islands and reefs. Adverse weather conditions and the inexperience of operators could contribute to accidents of varying magnitude. In addition to boats travelling to the reefs, many small boats traverse inland and along sheltered coastal waters to fish, water ski and boat race and, therefore have the potential to develop unforeseen problems.

Passenger ferries operate on regular daily trips to Great Keppel Island and other offshore destinations from Rosslyn Bay. Whilst these vessels are “in survey” and regularly maintained, accidents can still occur in these types of vessels. Large bulk carriers, navy vessels and trawler fleets also ply the coastal waters of the Shire.

Reference should be made to the Extreme Weather Event Contingency Plan Gladstone Region – 2023 - 2024 document published by Maritime Safety Queensland and available at www.msq.qld.gov.au. The plan is consistent with the Australian Warning System and outlines warning alert levels for the Gladstone region. The Regional Harbour Master will issue alerts in the event of an extreme weather event.

	Advice (YELLOW) Prepare to move, monitor conditions, consult vessel safety plans.	**24-48 hours before the event**
	Watch and Act (ORANGE) Mariners to relocate vessels to safety, as per vessel safety plans. Continue to monitor conditions and maintain a listening watch on VHF channels. Adhere to Regional Harbour Master directions.	**12-24 hours before the event**
	Emergency Warning (RED) Port closed. Movements not permitted without approval from Regional Harbour Master. Maintain a listening watch on VHF channels.	**Extreme event within 6 hours**
	Advice (YELLOW) Maintain a listening watch on VHF frequencies. Movements will be at the instruction of the Regional Harbour Master / Vessel Tracking Service.	**After event has passed, recovery underway**
	All Clear (WHITE) Wait for the Regional Harbour Master's all clear and VTS instructions for movements. **Please note, in MSQ's Dashboard, this aligns with the green port open status*	**Port open to all traffic, business as usual**

The Extreme Weather Event Contingency Plan Gladstone Region – 2023 - 2024 includes an appendix that details 'trigger to intervention levels' for a range of hazards at Rosslyn Bay and Fitzroy River.

8.2.4 Hazardous Material Incident

The Bruce Highway and the main northern railway line traverse the majority of the Shire both north and south. Many hazardous materials of varying types are transported by these methods. For this reason the potential for an incident of this type is ever present. Queensland Rail includes this risk in their operational plans. Privately owned road transport operators must follow state and national legal requirements if involved in consigning, packing, loading and transporting dangerous goods in Queensland.

Prevention and Preparedness Strategies

Short term
- Public education;
- Periodical emergency service training;
- Prohibition of parking of hazardous material transports in town areas; and
- Provision of containment equipment.

Medium term
- Knowledge of evacuation plan;
- Updated emergency contact lists; and
- Knowledge of chemicals and markings.

Long term
- Designated safe parking areas.

This risk can be assessed in 3 Hazchem (hazardous chemicals) categories:-

1) HAZCHEM ROAD

As in any populated area, movement of hazardous chemical agents by road occurs. The potential therefore exists for accidents involving large quantities of Hazchem, with resultant explosion, fire and other public safety threats.

Areas Affected
Any area within the Shire may be affected. However, it is most likely areas abutting the Bruce Highway.

2) HAZCHEM RAIL

As the main northern rail link runs through the region, movement of large quantities of Hazchem by rail also occurs. However due to the nature of the transport agency, with more isolated storage and decreased risk of vehicular collision, this threat is not as significant as road transport.

Areas Affected
Areas abutting the northern rail link.

3) HAZCHEM OTHER

Hazchem may also be stored in commercial and industrial sites within the Shire. However, due to the absence of major Hazchem storage facilities in the Shire, and the relatively small quantities stored, this threat is not significant.

Recurrence
There is no pattern to Hazchem accidents, however in the case of road and rail, the accident site is confined to defined areas.

Effects
The entry of hazardous material into dams, waterways and aquifers could have serious consequences on the community and the environment and all effort should be directed towards the prevention of such an occurrence. Similarly, all measures should be taken to prevent inhalation of the materials in a chemical cloud.

Mitigation
The transportation of designated chemicals is regulated under State legislation. The responsible authority conducts training courses in handling hazardous materials. The Region actively supports these activities and Workplace Health and Safety Officer's are employed by most member agencies of the LDMG.

8.2.5 Exotic Diseases (Animals and Plants)

Whilst various types of animals are in existence in the Shire, cattle and horses are in the largest numbers. For this reason, it is anticipated that these are the most likely in which widespread disease would occur.

Other types of diseases carried into the area by migratory species such as birds or pests are most likely to introduce from the north, e.g. Papua New Guinea. Should this be the case and if the disease is recognised early enough, quarantine of the area may occur.

The impacts on local agricultural industry (livestock and produce) would be widespread due to quarantines and additional clearances and checks to move their products. It would also impact on the recreational activities such as horse events. This differs from the medical epidemics. Whilst there are

some diseases that impact only animals or plants, there are some that can infect humans also such as Hendra. There would need to be joint involvement between Department of Agriculture and Fisheries and Queensland Health with a situation like this. These are covered in the Medical Epidemic section.

8.2.6 Medical Epidemic and Infectious Disease (Including Influenza Pandemic)

With the possibility of large numbers of overseas tourists visiting the Shire, either in residence, at resorts or in transit to other locations, the likelihood of the introduction of an infectious disease is a distinct possibility. This probability is further increased by the overseas troops visiting the Shoalwater Bay Army Training Area. An epidemic would impact the localised Livingstone Shire and disrupt the community. Additionally, there is the risk from other diseases that would reach pandemic scale, which is a risk of worldwide infection.

The COVID-19 coronavirus affects humans throughout the world. It can cause illness similar to the common cold or Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The role of the LDMG is to assist the lead agency in requests for assistance and support.

Since avian influenza broke out in late 2003, the World Health Organisation (WHO) has warned that, should this virus mutate and be transferrable from human to human, the world could be facing an influenza pandemic with significant consequences.

An influenza pandemic is a disease outbreak that occurs when:

- A new strain of influenza virus emerges to which no-one is immune;
- The virus causes disease in humans; and
- The virus is easily spread between humans.

In the absence of immunity, a new influenza strain could rapidly spread across the globe, causing epidemics or pandemics, infecting large numbers of people.

Yeppoon has a State-owned hospital, but in the event of an epidemic/pandemic it is more likely that patients would be treated in Rockhampton hospitals where specialist care would be more readily available.

Given the high standards of human health and hygiene and good veterinary and farming practices in Australia, it is not expected that a virus would originate and develop into a pandemic form in Australia. However, governments are preparing for emerging pandemic overseas and subsequent arrival in Australia by applying a combination of strategies:

1. **Alert** to the risk of a pandemic and preparing for a pandemic by increasing Australia's readiness and supporting overseas responses;
2. **Delay** the entry of the pandemic virus to Australia by applying border measures, supporting the overseas response and increasing surveillance;
3. **Contain** or slow the early spread of a pandemic virus once it emerges in Australia, including by strategic deployment of the National Medical Stockpile and strengthening public information campaigns to promote individual hygiene practices and community level measures such as social distancing;
4. **Sustain** the response while a customised vaccine is developed, including by supporting maintenance of essential infrastructure and services and strengthening community social distancing measures;
5. **Control** the pandemic with a customised pandemic vaccine when it becomes widely available; and

6. **Recover** providing the necessary support and stimulus to help the Australian community return to normal living as quickly as possible following a pandemic.

Prevention and Preparedness Strategies

Short term
- Public awareness.

Medium term
- Pandemic sub plan and Queensland Health pandemic plan.

Long term
- Evacuation plan.

Areas Affected
Any part or the entire region may be affected.

8.2.7 Marine Oil Spill

Rosslyn Bay small boat harbour and marina is the only constructed facilities for boats in the Shire. Most of the vessels moored in, or visiting the harbour would be diesel powered and less than 30-40 metres in overall length.

Large bulk carriers and freighters traverse the waters between Mackay and Gladstone and use the Capricorn Channel and the Fitzroy River mouth to Port Alma.

Should a vessel have problems in these areas and therefore cause a loss of a large quantity of oil or similar material, the LDMG may be required to activate (e.g. Shen Neng One grounding in 2010).

8.2.8 Critical Infrastructure Failure

A critical infrastructure failure within the Livingstone Shire would involve any of the following:

- Information technology;
- Telecommunications;
- Water supply;
- Sewerage treatment; and
- Power supply.

A failure of one or more of these areas would impact on the Shire depending on how long the failure is for, the degree of the failure and if there is more than one area failing. A recent event of this occurring is during the Ex Tropical Cyclone Oswald event on Saturday 26 January 2013 when Telstra's two fibre optic cables were impacted and the area's telecommunications failed. This resulted in no landline, mobile or internet services for the entire Shire on the Telstra network and several other providers due to congestion. This impacted on Emergency Services, Local Government and all residents. Obviously, this impacts the typical avenues employed for warnings.

8.2.9 Space Debris Re-Entry

There is an increasing chance of space debris falling to earth due to the number of older satellites and decaying orbits. The National Plan sets out contingency arrangements to cover these events. Australian Plan for Space Re-entry Debris (AUSSPREDPLAN) details the arrangements for the Australian Government to inform States and Territories of any risk posed to Australian interests by the re-entry of space debris. The plan outlines how the Australian Government will support states and territories if space debris should impact within their jurisdictions. The plan identifies roles and responsibilities for key Australian Government agencies and committees in supporting the response to space debris re-entry. It also details how support should be requested and how it would be managed.

Prevention and Preparedness Strategies

Short term
- Public awareness.

Medium term
- Early notification of atmospheric entry and landing sites.

Long term
- Evacuation plan.

Areas Affected
Any part or the entire region may be affected.

Effects
In addition to the possibility of impact damage of varying degrees, some satellites carry nuclear powered generators and other nuclear devices. Adequate warning, including details of the payload when known, is provided by National Emergency Management Agency (NEMA), which conducts the operation. Local agencies may be called upon to assist.

PART 9. QUEENSLAND EMERGENCY RISK MANAGEMENT FRAMEWORK

The Queensland Emergency Risk Management Framework QERMF) is a set of components that aim to support risk-based planning within the emergency management context in Queensland. The Framework is consistent with the Queensland Emergency Management Assurance Framework (EMAF) which includes the Standard for Disaster Management in Queensland.

Purpose

The aim of the framework (QERMF) is to provide a consistent approach to assessing risk that can be operationalised and directly supports risk-based planning for all levels of QDMA. It is designed to allow local, district and state levels to focus on risk assessment from the perspective of their roles and responsibilities under the QDMA and to then mutually support each other where appropriate. The intent of the framework is to establish a complete understanding of the hazards that pose a threat to the region and the community. As the QERMF was endorsed by the QDMC it is the legislated framework to be used.

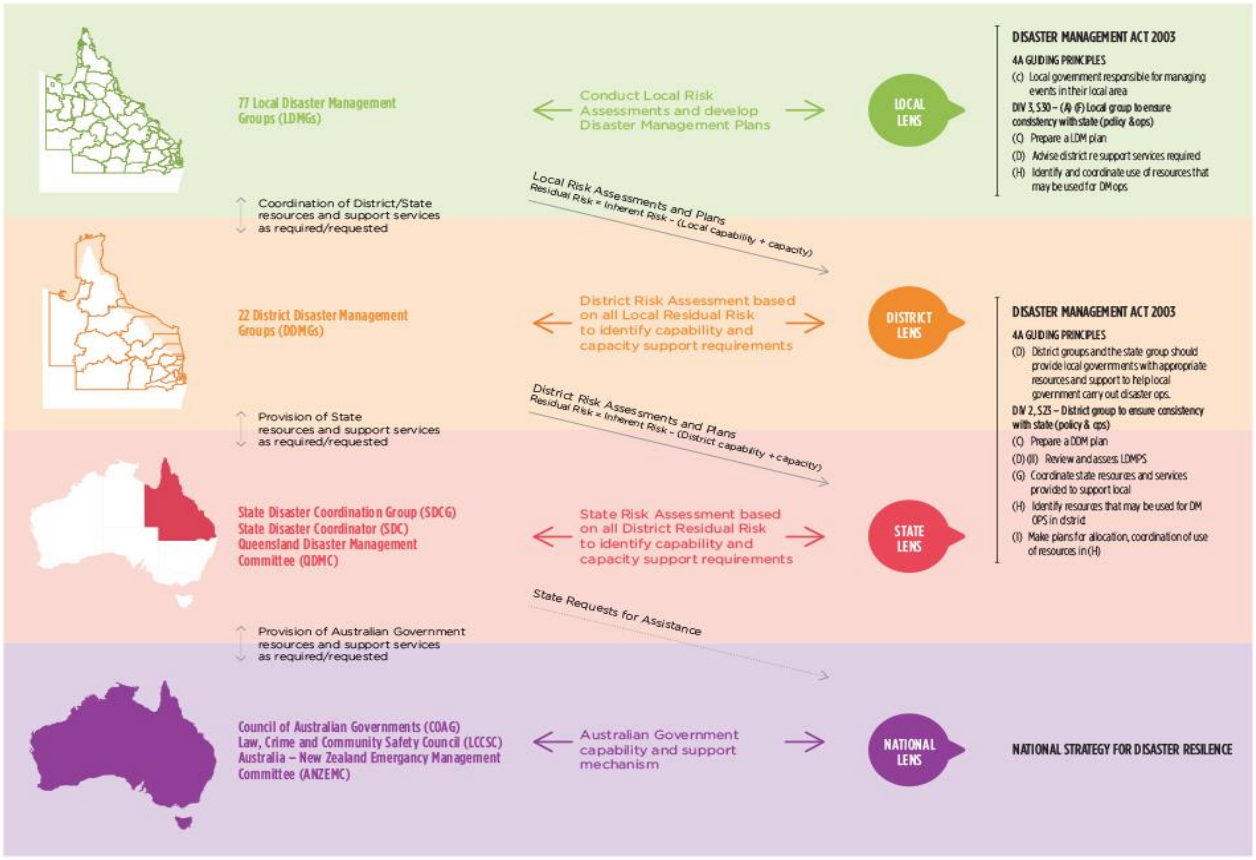


Figure: Risk based planning equation (Source: Disaster Management Guideline, Section 3).

Methodology

Whilst the Framework is based on ISO 31000, National Emergency Risk Assessment Guidelines (NERAG) and EMAF, there are some differences in the Framework methodology to NERAG including:

- The Framework's assessment of likelihood, proposes the assessment of probability based on the historical likelihood. The aim of this approach is the assessment can be operationalised and directly support risk based planning;
- The addition of vulnerability into the assessment of risk will provide a consistent approach to assessing how vulnerable a community/site/area is prior to a disaster season based on key components that compose and sustain a community; and
- Finally consequence is assessed.

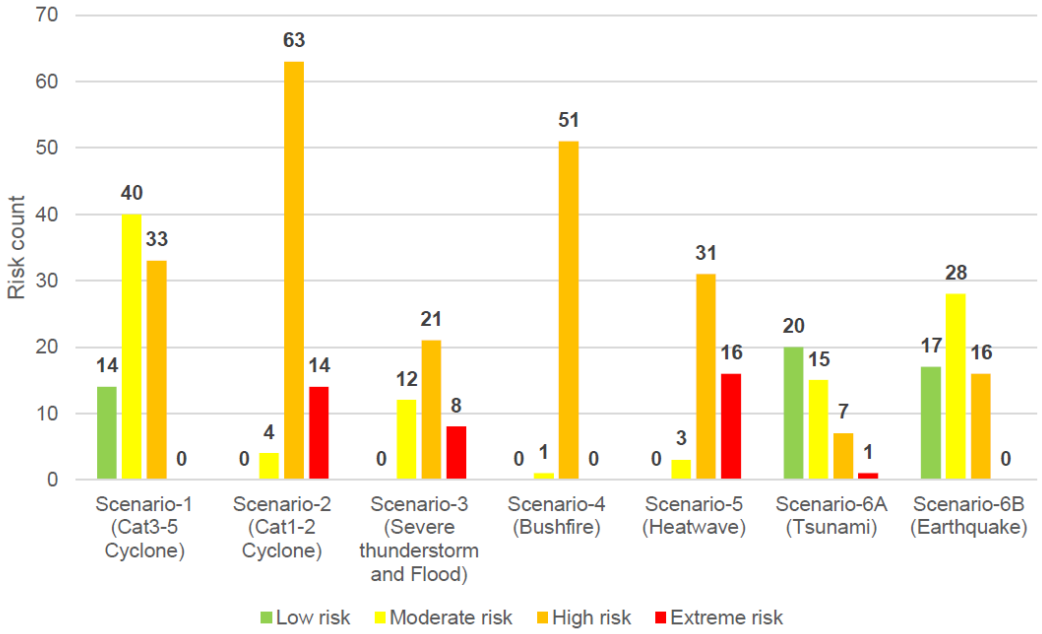
The LDMG recognises that the risk assessment process is a shared responsibility and all agencies, should assist the risk assessment process including the management of residual risk (risk remaining after the risk treatment has been applied) beyond the capacity and capability of local arrangements. This includes by integrating the outcomes of disaster risk assessment into the disaster, business continuity, strategic and corporate plans and ensuring an improved understanding, coordination and resource allocation of disaster risk management at all levels through informed evidenced based research and education.

A 'Multi-hazard risk assessment of Livingstone Shire Council using Queensland Emergency Risk Management Framework (QERMF)' was undertaken in November 2021. This assessment includes detailed vulnerabilities for six scenarios:

1. Severe Tropical Cyclone (Category 3-5);
2. Tropical Cyclone (Category 1-2), tropical low or east coast low;
3. Severe Thunderstorm leading to flash flooding;
4. Large scale Bushfire;
5. Severe and extreme Heatwaves; and
6. Earthquake and Tsunami

Residual Risk

The LDMG supports the communication of residual risk outside normal Local and State Government departmental boundaries to ensure Whole of Government consideration and planning towards these risks. The Multi-hazard Risk Assessment of Livingstone Shire Council using the QERMF found that overall, most residual risks posed by the hazard scenarios were either high or moderate (see figure below). Most scenarios had at least one extreme residual risk, with Scenario 5 (heatwave) having the most with 16 extreme residual risks. Scenario 2 (east coast low) and Scenario 4 (bushfire) resulted in the largest number of exposed elements at high risk (63 and 51 respectively).



Distribution of risk profile across different scenarios

PART 10. CAPACITY BUILDING

10.1 Community Awareness

Section 30e of the Act requires the LDMG "to ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for, responding to, and recovering from a disaster".

The members and organisations that make up the LDMG currently provide public information and education programmes to improve community awareness. These include:

- The Council website and social media pages;
- Livingstone Shire Council Disaster Dashboard
- Disaster and emergency community awareness brochures available in Council Offices and Libraries;

- Livingstone Shire Council disaster prepared communities portal;
- Queensland State Government advertising, presentations, and website material;
- QFD advertising, presentations and website material;
- EMA Community Awareness Publications;
- Australian Institute for Disaster Resilience 'Education for Young People' website (https://schools.aidr.org.au/);
- Presentations to various organisations e.g. by Council Disaster Management and SES group leaders;
- Community information sessions and workshops, as required;
- Presentations to local community groups and schools in regards to local disaster management arrangements and mitigation actions that may be taken by the community to prepare for and cope with hazards;
- Get Ready Week
- Business continuity workshops for local businesses;
- QFD fire and bushfire awareness programme;
- BoM weather warnings and website material; and
- Targeted engagement based on community vulnerabilities.

The LDMG recognises that providing information on how to look after yourself, your family, your home, business and community in the event of a disaster is an effective way to build community resilience and help communities recover in the aftermath of an event. One of the key long term objectives of the group is to provide this information in a timely, coordinated and accessible fashion.

The LDMG members will promote the following key educational and awareness tools for distribution across the Livingstone Shire:

- Household emergency plans;
- Household emergency checklists;
- Business emergency plans; and
- Business emergency checklists.

The aim of these plans will be to:

- Encourage people and businesses to prepare themselves, their properties and their clients for disasters;
- Improve target audiences' safety awareness levels and safety behaviours during a disaster or emergency; and
- Encourage people to be aware of, and care for their neighbours in the immediate aftermath of a disaster.

Public education programmes are undertaken to ensure community awareness and preparedness. This builds the community's capacity to withstand the impacts from a disaster and recover. Targeted programmes will be conducted based on community vulnerabilities.

10.2 Community Vulnerabilities

Everyone faces a degree of risk when a community is challenged by a disaster or emergency. Protective factors enable many people in a community to be better prepared and able to adapt to the impact of a disaster, for example, strong family and social connections. However, such factors may be limited in an individual or a community's daily life, resulting in vulnerability to higher levels of risk, injury or loss, or severe or longer term impacts than others.

Individuals, families and specific population groups susceptible to vulnerability factors and low levels of resilience, often require more targeted support to remain safe and to prepare for, respond to, and recover from, disaster events.

The Red Cross states; to determine people's vulnerability, two questions need to be asked:

1) To what threat or hazard are they vulnerable?
2) What makes them vulnerable to that threat or hazard?

Counteracting vulnerability requires:

a) Reducing the impact of the hazard itself where possible (through mitigation, prediction, warning and preparedness);
b) Building capacities to withstand and cope with hazards; and
c) Tackling the root causes of vulnerability, such as poverty, poor governance, discrimination, inequality and inadequate access to resources and livelihoods.

Within the Livingstone region there are populations that are more vulnerable in the event of a disaster. These groups include the cultural and linguistically diverse, and those that have a need for assistance who make up 5.7% (total of 2.235 residents) of the shire's population. Those needing help or assistance are in one or more of the three core activities of self-care, mobility and communication due to a health condition, disability or elderly.

Table 11: Need for assistance with a profound or severe disability, Livingstone (S) LGA and Queensland, 2021

LGA / State	Need for assistance		No need for assistance		Total[(a)]
	number	%	number	%	number
Livingstone (S)	2,235	5.7	33,275	84.5	39,398
Queensland	309,366	6.0	4,513,222	87.5	5,156,138

(a) Includes need of assistance not stated.

Source: ABS, *Census of Population and Housing, 2021, General Community Profile - G18*

10.2.1 Bushfire

The Livingstone Shire has significant areas of native vegetation, and while this is an important asset for ecosystem services and amenity, under certain weather conditions there is a risk of uncontrolled bushfire. QFD annually produces the Livingstone Shire Bushfire Risk Mitigation Plan which outlines the key risk areas. QFD have adopted a policy/programme 'Bushfire Prepared Communities'. This includes information for people about deciding to leave early.

Vulnerability of People

Whilst the general population is unlikely to be directly impacted in anything other than high-intensity, large scale bushfires, as with 2018 and 2019, there are some rural and remote communities in isolated areas which are highly vulnerable to general bushfire occurrence. These small, populated locations are at times off the grid and located in densely vegetated areas presenting a significant challenge for bushfire risk management. Built up areas established in locations surrounded by dense or continuous vegetation (e.g. mountainous suburban areas) also are highly vulnerable to exposure.

Social isolation of vulnerable people also presents issues within the community. Some vulnerable people do not understand bushfire risk and may not be informed of support services available to increase their individual resilience. Cultural and linguistic barriers can also exist which increases social isolation and vulnerability to bushfires. Inconsistent messaging regarding impending bushfire impact often causes confusion. This risk increases with recent migrants and tourists for whom English is not the primary language and comprehension of key messaging is poor.

Tourists to Livingstone Shire may not be prepared for the extreme climatic conditions, including bushfires which have an increased likelihood in peak tourism season. While bushfires may affect all people, residents tend to be more accustomed to and better prepared for bushfires, particularly in terms of taking appropriate action to prepare and respond. Aged care facilities and services, together with their residents, have experienced significant impact during large-scale bushfires.

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. However, a major bushfire would undoubtedly stretch the capability of these groups. The composition of the vulnerable groups also needs to be considered, however significant effort is required to maintain engagement and education with these groups.

Vulnerability of Buildings

The Bushfire Risk Mitigation Plan that is annually developed by QFD identifies the localities in the Livingstone Shire assessed to have a high bushfire risk to community or infrastructure. The plan also identifies high priority hotspots of buildings (assets) and subsequent activities to mitigate risks to these areas. The risk of each locality in Livingstone Shire can be calculated using the QERMF methodology.

Vulnerability of Lifelines

The most vulnerable lifeline is power, particularly if overhead transmission lines are disconnected or destroyed by fire. It is a standard practice to disconnect powerlines in fire affected areas, as the powerlines themselves can become a source of additional ignitions, on top of the obvious hazard to community and firefighters if lines come down. Less well known is the potential for flame to conduct electricity. In the event that firefighters or residents attempt to douse flames under live powerlines, the flame sheets have the potential to conduct electricity into the water streams, introducing an electrocution risk to an already serious situation.

Overhead communication lines would also be vulnerable at the same time. Due to the low factor loading of the bush areas and the clearing along the main transmission line routes the vulnerability of the power system is not particularly high. The main risk of overload comes from overuse of the facilities, as these services can experience significant demand spikes, exacerbated by the trend towards video and other large files from smart phones being transmitted.

Other lifelines including transport corridors have a low level of vulnerability in a bushfire scenario, however they may be closed temporarily due to fallen trees, branches, fallen powerlines or smoke.

Vulnerability of Critical Facilities

As mentioned above, the loss of power would cause some degree of hardship due to its flow on effect to other lifelines (such as loss of reticulated water supply) and critical facilities. However, critical facilities such as hospitals generally have back-up emergency power capacity which would be sufficient.

Vulnerability of gas pipeline connections can also be an issue within urban areas due to exposure of nylon lines to high radiant heat fluxes. The exposure of these lines can lead to melting of the pipe causing a secondary fire against the exterior of the house as was found to be an additional issue within the 2003 Canberra fires. Livingstone Shire areas with underground gas pipeline connections include; Capricorn Adventist Retirement Village and Ocean View Estate in Yeppoon and Zilzie Bay Estate in Zilzie. The same flexibility connections can be used to connect a domestic supply bottle to the house lines and would present a similar danger, however the volume of gas in a domestic system would be considerably less than a reticulated system.

Vulnerability of Local Economic Production and Employment

The potential loss of significant numbers of livestock, agricultural/horticultural production, equipment, machinery, fencing and irrigation can all have an impact to economic production and employment in the event of a bushfire.

Vulnerability of Environment

Severe bushfires can destroy the environment including endangered remnant vegetation and threaten species. There are many different vegetation communities in the Livingstone area with some that do not have fire promoting qualities and are sensitive to fire. Other vegetation types have evolved to rely on fire to reproduce and therefore have qualities to promote fire and rate of spread.

Some species of fauna can be severely affected by severe bushfire whilst others have developed behaviours to increase their survivability. Loss of habitat and the increase in predators following fire can significantly affect local populations.

10.2.2 Cyclones

In the event of a severe cyclone or East Coast low, there is a high probability of significant damage from the cyclone and the secondary hazard of wind borne debris. In general terms, homes built before 1985 usually sustain more damage during a cyclone than more recently built homes.

Vulnerability of People

Due to the high probability of significant damage, most people in the area will be vulnerable in the event of a severe cyclone. Residents with dwellings close to the coastline or the adjacent islands will be vulnerable to the effects of a severe cyclone or East Coast low. The most typical damage will be from wind, wind borne debris and inundation from localised flooding and/or storm tide events.

The islands and resorts are encouraged to have in place emergency management plans for cyclonic events. The logistics of moving or evacuating many tourists and staff to safe shelters needs to be well documented and rehearsed.

Stanage is a key concern during the summer months, due to its popularity with transient family groups and its isolation. It is understood that there is a high level of preparedness amongst the local residents for possible isolation arising from the access roads being cut by flood waters. Although these residents understand the risks involved, the LDMG has an underlying responsibility to support and carry out evacuations if required. This will not be an easy exercise to undertake should there be a cyclone in the area at the time. It is therefore recommended that specific evacuation procedures be prepared for Stanage.

For the overall area, of particular concern, will be the vulnerable groups that have been identified above.

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability, however, a severe cyclone would undoubtedly stretch the capability of these groups. The composition of the vulnerable groups also needs to be considered, however significant effort is required to maintain current information detailing numbers and locations. Census data is useful to capture this information.

Vulnerability of Buildings

Due to the significant proportion of building stock that is pre-1980, the vulnerability of residential buildings is relatively high for a severe cyclone. Additionally, a significant proportion of these buildings are also in the more exposed areas and due to their exposure will be subjected to greater wind loadings than those buildings shielded by the local ranges.

A secondary hazard of wind borne debris is likely to occur as these buildings suffer damage which will then increase the vulnerability of more structurally adequate buildings in the area. This will be a major concern for critical buildings such as the hospital and buildings designated as shelters.

Public Cyclone Shelter and Place of Refuge

Livingstone has a Public Cyclone Shelter located at the Yeppoon State High School.

Vulnerability of Lifelines

The critical lifelines likely to be the most affected by Cyclones and East Coast Lows are:

- Electrical power loss (overhead power lines destroyed), due to its flow on effect to all other services;
- Communications loss (phones, internet);
- Fuel supply loss from Gladstone and other centres;
- Food supply loss from outside the area; and
- Road access loss.

The vulnerability of the lifelines will be a function of their location and structural adequacy and whether they experience wind borne debris damage.

Vulnerability of Critical Facilities

The loss of power would cause hardship due to the reliance of most lifelines on power, particularly the supply of drinking water and sewerage services. If bulk food storage facilities are not cyclone wind resistant buildings, they will become vulnerable in the event of a severe cyclone.

Minor fuel supplies are stored in the area. If roads from Gladstone become inaccessible, the region could experience a shortage of supply of fuel, which could be problematic.

The LDMG have a critical infrastructure priority list detailing the priority of services to have power restored.

Vulnerability of Local Economic Production and Employment

An event involving a severe cyclone or low, depending on the severity, could have a long term impact on the area economically and upon employment levels. Tourism is often impacted as a result of media coverage depicting the area as being closed of business.

Vulnerability of Environment

Cyclones often cause environmental changes far beyond the area they make landfall, destroying vegetation, causing erosion, killing animals, interrupting habitats and changing ecosystems. Strong winds can snap branches, uproot trees and detach flowers, fruits and seeds effecting crops that communities may rely on for sustenance or trade.

10.2.3 Earthquakes

As earthquakes are difficult to model and have the capability to affect all of the region, all areas are vulnerable.

Vulnerability of people

A significant number of people in Livingstone Shire are at risk from an earthquake. The resilience of the community is impaired for the following reasons:

- Buildings are not specifically designed to withstand earthquakes;
- Due to the rarity of earthquakes in this region it would come unannounced and cause panic and mayhem amongst the residents not used to such a phenomena (e.g. the Newcastle earthquake experience); and
- Lifelines would be severely disrupted, impacting greatly on the community, especially given its reliance on outside sources for water, fuel and power.

Vulnerability of social structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. However, a severe earthquake has the potential to effect a significant proportion of the community and cause damage to hundreds of buildings including buildings and infrastructure used by community groups.

As with all disasters the community most at risk are the young, elderly, uninformed, or those who require support due to their lack of mobility and specialist care.

For example:

- Hospitals, aged care facilities;
- Emergency service facilities;
- Shopping centres;
- Community shelters;
- Fuel supply installations; and
- School, churches etc.

Vulnerability of Buildings

Typically, structures with a reinforced concrete frame and unreinforced masonry infill are a popular form of low to medium rise construction used in hospitals and public works related structures such as schools. Infill panels are often brick or block which provides some lateral resistance. Upon cracking of the infill masonry lateral loads are transferred to the concrete frame. Collapse can occur upon the disintegration of the infill or through shear failure of the frame.

Structures with reinforced masonry on concrete slab floors that comply with the current wind loading codes may perform well under moderate seismic activity. Older concrete block buildings not built to the wind or earthquake codes will be less earthquake resistant than the equivalent modern construction. Due to the increased prevalence of cyclones buildings are often designed to perform adequately in high wind conditions. However, it was demonstrated in the major earthquake that hit Kobe in Japan that older housing, which could withstand typhoons did not perform well in the seismic events.

Vulnerability of Lifelines

By far the most vulnerable lifelines are:

- Power and communications and their flow-on effect;
- Underground services, e.g. water and sewerage services; and
- Transport, e.g. bridges under certain circumstances may collapse.

All lifelines will be affected to varying degrees and emergency services will be similarly affected with members likely to be victims of the damage and disruption. No structure is truly immune to earthquake damage. The emphasis is to maintain lifelines and key facilities to allow a speedy return to normality after the event.

Vulnerability of Critical Facilities

Water supply and sewerage systems are highly vulnerable to damage. Restoration of power and communications following disruption will depend on the level of damage, site accessibility, availability of response personnel and equipment, and identified priorities. Aged in ground liquid fuel lines are vulnerable to rupture and fuel and water tanks without baffling are vulnerable to damage or failure.

Vulnerability of local economic production and employment

A severe earthquake would cause an impact on the local economy and employment in the retail and commercial sectors of the region. Indirect economic production losses can sometimes be much more significant than those caused by physical damage. Local recovery plans can address these losses.

Vulnerability of Environment

Earthquakes which occur in areas of the Great Barrier Reef (for example the 2016 5.8 magnitude earthquake offshore from Bowen, Queensland) may cause considerable damage to the reef's structure. They can have devastating effects on wildlife and their habitats. Release of hazardous materials from damaged containers, pipes, or industrial sites is likely to have adverse effects on environmental health. This can result in significant losses to biodiversity and environment, impacting animal behaviour and habitats across the medium to long term.

10.2.4 Landslips

Vulnerability of People

Damage to roads and slopes are the main concerns for people within the Livingstone Shire. With human activities continually expanding to mountainous areas the risk to people increases.

Vulnerability of Social Structures

The social structure in the Livingstone Shire is unlikely to be significantly vulnerable in this event as the majority of events would be small and would impact on a small number of people. Should an event occur which results in numerous fatalities (such as a Thredbo type landslide with 18 deaths) then more widespread social impact would be felt.

Vulnerability of Buildings

Buildings can be impacted by land sliding by either being in the zone of earth movement itself or be in the impact zone from the slide runout. Utilising the limited base information that has been provided it is considered that vulnerability would generally result from either steep terrain (as an example, greater than 15%) or from land development which has not been carried out in a controlled and engineered process.

The structural damage that a building can undergo when impacted on by a landslide event can range from individual boulder impact, through mass earth and rock movement, to distress and cracking due to loss of lateral restraint.

Vulnerability of Lifelines

The most critical lifelines affected are:

- Loss of electricity due to damage to lines or substations. The loss of electricity can affect many other services;
- The loss of fixed line communications. Landslides can cut off trunk telecommunication lines;
- Blockage to highways and other roads. Alternative routes would be available on most occasions; and
- Water reservoirs and associated piping may be affected or damaged by landslides. Reservoirs are typically in steep terrain.

Vulnerability of Critical Facilities

This is considered similar to the issues laid out in vulnerability of lifelines. Yeppoon Town Hall is identified as a significant community meeting place and is vulnerable to landslip. Other public and commercial meeting facilities will need to be considered.

Vulnerability of Local Economic Production and Employment

An event involving land sliding is likely to have an impact on a localised area of the community rather than an entire community. However, the Christchurch Earthquake in 2011 resulted in numerous deaths and widespread damage from land sliding. Therefore, in rare situations this significant impact can result.

Vulnerability of Environment

Landslides can overwhelm, and even pollute streams and waterbodies with excess sediment. In extreme cases they can dam streams and rivers, impacting both water quality and fish habitat. Landslides can wipe out large tracts of forest, destroy wildlife habitat, and remove productive soils from slopes.

10.2.5 Flooding

Communities on the floodplain are areas vulnerable to major flood events. In addition, areas close to local creeks/rivers and overland flow paths are also vulnerable to flooding, in particular flash flooding.

Vulnerability of People

Residents located in areas that are inundated or cut off by floodwaters and vehicles attempting to use flooded roadways are at risk from flood related problems. Livingstone Shire Council requires new development to be placed above the 100 year ARI flood levels; however development and infrastructure in older portions of the region, are at risk of inundation and isolation.

Local catchment flooding is expected to be short lived whilst the Fitzroy River, and its tributaries such as Alligator Creek, influence a significant portion of the region and can cause inundation for prolonged periods. Those people in the immediate vicinity of the flood prone areas are at risk from flooding. There is also a significant risk of isolation in several areas, including Stockyard Point, Ogmore and Byfield.

Vulnerability of Social Structures

Displacement from one's home, loss of property and disruption to business and social affairs can cause continuing stress. For some people the psychological impacts can be long lasting. Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. The effect of a flood would be quite devastating to the community and the development of Evacuation Sub plans, Communication sub plans, and Community Engagement strategies assist to minimise the vulnerability.

Vulnerability of Buildings

Flooding of urban areas can result in significant damage to private property, including homes and businesses. Losses occur due to damage to both the structure and contents of buildings. Insurance of the structure and its contents against flooding can reduce the impacts of floods on individuals or companies. Low rise housing and commercial/industrial premises may however suffer significant impact. These impacts are also likely to occur during local creek and overland flow path flood events, however the duration of inundation, and therefore the extent of damage, is likely to be much less.

Vulnerability of Lifelines

Streets and some major access roads will be closed including the Bruce Highway. The airstrip at the Rockhampton Airport will be inundated when floods reach gauge level 8.7m. In the rural areas, many local roads are cut during flood events, both Fitzroy River flooding and local creek flooding. Sewerage facilities may be vulnerable as well as the sewerage pumping stations. Electrical substations and some Telstra exchanges may be isolated due to flooded roads.

Vulnerability of Critical Facilities

Critical assets included in the flood extent are Yaamba SES, Clayton Rd sewer pumping station, SES Yeppoon, Cordingley Street Depot, Shaw Avenue sewer pumping station, Charles Street sewer pumping station, and Wattle Grove sewer pumping station.

Vulnerability of Local Economic Production and Employment

The local economy would be affected through lost production through the period of the event and the recovery phase which may also impact on employment levels. There may also be crop, fences and limited livestock losses. A combination of high tides and a rain event can result in localised flooding effecting businesses, specifically from Fig Tree Creek.

Vulnerability of Environment

In many natural systems, floods play an important role in maintaining key ecosystem functions and biodiversity. They link the river with the land surrounding it, recharge groundwater systems, fill wetlands, increase the connectivity between aquatic habitats, and move both sediment and nutrients around the landscape, and into the marine environment. For many species, floods trigger breeding events, migration, and dispersal. These natural systems are resilient to the effects of all but the largest floods. The environmental benefits of flooding can also help the economy through things such as increased fish production, recharge of groundwater resources, and maintenance of recreational environments. Areas that have been highly modified by human activity tend to suffer more deleterious effects from flooding. Floods tend to further degrade already degraded systems. Removal of vegetation in and around rivers, increased channel size, dams, levee bank and catchment clearing all work to degrade the hill-slopes, rivers and floodplains, and increase the erosion and transfer of both sediment and nutrients. During a flood event the Fitzroy river can see an increase of Hyacinth in the river system that impedes water flow, reduces fish habitat and blocks access to water for stock and wildlife. The aquatic weed thrives in the freshwater and requires pest management intervention.

10.2.6 Storm Tide

Cyclonic events besides being the source of destructive high winds also bring periods of high rainfall and storm surges which increase coastal water levels for periods of several hours. When these increased coastal water levels are combined with periods of heavy rainfall there is a significant flooding hazard.

This hazard is a concern for the coastal areas of the region. A Storm tide investigation has been completed; maps are available on the website for the community. A technical risk assessment identified the following are exposed to coastal hazard impacts, today and into the future and are at high or very high risk.

11 SEGMENTS OF IMPORTANT ROAD

multiple coastal hazard impacts, including erosion

7 BEACHES/ DUNE AREAS

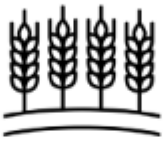
sea level rise and erosion impacts

3 CARAVAN PARKS

sea level rise and erosion impacts

COASTAL FRONTAGES OF NATURAL AREAS

multiple coastal hazard impacts



AGRICULTURAL LAND IN STANAGE

sea level rise impacts

5 COMMUNITY FACILITIES

mostly erosion but also sea level rise impacts

1 VILLAGE CENTRE (KEPPEL SANDS)

coastal erosion impacts

11 RESIDENTIAL AREAS + 1 FUTURE EMERGING COMMUNITY AREAS

mostly erosion but also sea level rise impacts

3 PIECES OF INFRASTRUCTURE - EMU PARK WASTE TRANSFER STATION, STANAGE COAST GUARD AND LOCAL BOAT RAMPS

multiple coastal hazard impacts

Vulnerability of People

It is expected several communities may be flooded and/or isolated by storm tide inundation. The areas at risk are detailed below as part of the Lifeline Vulnerability assessment.

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. The effect of a severe storm tide would be quite devastating to the community and the development of Evacuation Sub plans, Communication sub plans, and Community Engagement strategies assist to minimise the vulnerability.

Vulnerability of Buildings

Vulnerable buildings will suffer the impacts from inundation as well as any impact from strong winds and wind borne debris. The water inundation could also cause severe damage to these buildings. Some areas may suffer significant long term damage to buildings and the supporting infrastructure.

Vulnerability of Lifelines

Keppel Sands and Joskeleigh may become completely isolated during a storm surge, due to inundation of the Keppel Sands Road. These communities could not expect external assistance during an event and would need to be evacuated before significant sea level rise occurred as all of Joskeleigh and much of Keppel Sands may become inundated, and southern part of Keppel Sands is at risk from Pumpkin Creek breaking out (and wave break in over the seawall).

The urban area along the coastline may become fragmented with storm surge sea level rise potentially (depending on height of rise) cutting the Scenic Highway along the Coast at the following locations:

- Ross Creek (also affects Tanby Road and Taranganba Road);
- Cooee Bay (extreme events only);
- Lammermoor Beach;
- Statue Bay;
- Causeway;
- Kinka Creek (Shoalwater Creek); and
- The Rockhampton-Emu Park Road (Hill Street) is likely to be affected by surge in Cawarral Creek.

As a result of coincident stormwater runoff severing alternative inland access (where this access exists) areas likely to be isolated include:

- Emu Park and Zilzie;
- Kinka Beach;
- Residential area north of the Causeway;
- Rosslyn Bay and part of Statue Bay;
- South end of Lammermoor Beach and northern end of Statue Bay;
- Taranganba, south end of Cooee Bay, and north end of Lammermoor beach; and
- North End of Cooee Bay.

Access to areas north of Yeppoon may become affected by storm surge and (particularly) wave action cutting Farnborough Road, and storm surge (in probable maximum surge case) affecting bridges across Barwell's Creek.

Other access issues arise with the bottom end of Pinnacle Street, Causeway Lake being very low (currently street kerb and channel is affected by HAT), the only vehicle access path into this cul-de-sac. During a storm surge, this access would be rapidly blocked to conventional vehicles.

Roads

Inundation of roads is most likely to occur as a result of backflow of tidal water through the existing open and underground stormwater drainage networks. Flow velocities are expected to be minimal, possibly in the order of 0.5m/s and scour of road pavements or footpaths is therefore unlikely to be a source of major road infrastructure damage. Long term inundation of roads and footpaths (approximately 12 hours) may allow the underlying road pavements and subgrade to become waterlogged, resulting in a softening of the pavement structure. The pavement should return to pre-inundation strengths when the underlying pavement and subgrade has sufficiently dried. This may take some time after the surface water has receded.

When the inundation has receded, it is recommended that vehicular use on recently inundated roads be restricted to single axle vehicles and emergency vehicles. Heavy or commercial vehicles, not required for emergency access, should be prevented from travelling on the affected roads until the pavements have regained sufficient strength. This time can vary considerably and is particularly dependent on the type of subgrade material. It is therefore recommended that Council engineers be consulted before unrestricted access is permitted.

Sewer
During wet weather, sewerage inflows tend to increase dramatically due to illegal stormwater connections and groundwater ingress. It could be expected that this would also be the case during periods of surge inundation.

Some areas south of Rosslyn Bay and north of Emu Park and Keppel Sands are not connected to sewage. Some damage to individual septic systems due to seawater ingress or flotation of septic tanks can be expected. Seawater ingress would stop or hinder treatment of sewage in the tank, and result in release of essentially untreated waste into absorption trenches in saturated ground. Septic systems are typically private infrastructure (except for public toilets) but release of sewage has major public health implications.

Four council owned critical assets within the extent of storm surges are:

- Merv Anderson Park boat ramp sewer pumping station;
- Merv Anderson Park information centre sewer pumping station;
- Apex Park sewer pumping station; and
- Causeway Esplanade sewer pumping station.

Water Supply
The water supply system is typically located on elevated ground and or sealed underground infrastructure. Some above ground creek crossings may be at risk.

Communications
The Telstra infrastructure is all underground reticulation. The system is therefore designed and installed to be robust against the ingress of water. The pit and conduit system is regularly inundated with water as part of the natural storm water dissipation. The cables and cable joints used are grease filled which can be submerged in low level water with no adverse effects. The cable connection pillars, which are located above ground, are also sealed and positively pressurised to prevent the ingress of water, however are not submersible.

Electrical Supply
The Energy Queensland infrastructure is a combination of overhead and underground reticulation. 11kV and 415V services are reticulated to all areas. The overhead reticulation is suitably segregated from the rising water by virtue of being located well above ground level. The poles supporting the cables can withstand minor water flow around the base of the pole. Susceptible points in this system are locations where overhead and underground reticulation is joined at connection boxes.

The underground reticulation is robust against water due to the inherent resistance required for underground installations. The weak points are ground mounted and low level equipment, which is not waterproof. These include house meter panels, distribution pillars, pad mount transformers and 11kV Ring Main Units (RMU). Energy Queensland has a series of cascading protection, which includes meter panels protected at distribution pillars, protected at the transformer, at the RMU, and at the zone substation. As the protection trip proceeds from meter panel to substation a greater area is affected by a loss of power. Power will not be able to be returned until the water level lowers and new equipment is installed. In the case of transformers and RMU's this may take 2 to 3 weeks for supply and installation.

In the Yeppoon region, two underground high voltage pad mount sites are at risk from Annual Exceedance Probability (AEP) of 1 in 50, 1 in 100, 1 in 500 and 1 in 1,000-year surges. These are estimated to be up to and over 1.2m underwater.

One underground high voltage pad mount site in the Emu Park region is also at risk from all estimated surges. The depth of these surges at the sites are also estimated to be up to and over 1.2m.

There are no essential Energy Queensland installations within the Keppel Sands region. There is potential loss of life situations if the electricity is not shut off prior to water levels rising. The speed at which water rises and warnings, which may be available, will play an important role in assisting Energy Queensland in the maintenance and safety of the network. However, the protection settings are generally set to provide power shutoff in less than 1 second.

Vulnerability of Critical Facilities

Public buildings at risk from inundation include:

a) Keppel Sands State School
b) Emu Park Library
c) Emu Park Community Hall
d) Cedar Park Shopping Centre
e) Yeppoon Coast Guard
f) Keppel Sands Road Communications tower

Vulnerability of Local Economic Production and Employment

An event involving a severe cyclone or low, depending on the severity in combination with a significant storm surge, could have a long term impact on the area economically and upon employment levels should significant damage occur – this is however considered to be an unlikely event.

Vulnerability of Environment

Storm Tide has significant impacts on environment causing erosion of beaches, extensive property loss and damage to coastal habitats. Storm tide will kill crops and wildlife where it moves in causing animals to flee inland, especially fresh water amphibious creatures. Salt water is very toxic to fresh water dependent animals and can cause death. When the water eventually subsides or evaporates, salt residual will stay behind, continually hurting wildlife in the area.

10.2.7 Severe Storms

In this section wind, hail and lightning hazard vulnerability are considered. The associated flooding hazard vulnerability is covered under the Flooding section.

Vulnerability of People

People at most risk to severe storms are:

- The elderly, very young, and the physically or mentally impaired;
- People in mobile homes;
- People living or working in remote rural or isolated areas;
- People who may not understand the warning due to a language barrier; and
- People in homes within flood-prone low-lying areas.

Anyone who is caught outdoors with imminent arrival of a severe storm is vulnerable to lightning strike. While this may apply to any person within the Livingstone Shire, it is more likely farm and forestry workers, fishermen, miners and construction workers. Employers need to communicate the necessary evasive and precautionary actions which should be taken. Safety measures should be communicated widely throughout the Livingstone Shire in order to raise awareness of the steps which can be taken to improve the safety of anyone who is unable to find shelter under these conditions including:

- The safest place is inside a building or a vehicle;
- Inside a home, avoid using the telephone landline, except for emergencies;
- Do not use computers, electrical appliances or plumbing;
- Lightning can strike without rain;
- Lightning risk remains for up to 30 minutes after the last observed lightning or thunder;
- Lightning can affect the brainstem, which controls breathing. If a victim appears lifeless, it is important to begin resuscitation immediately;
- Avoid sheltering under tall trees;
- Get out and away from open water;
- Get away from tractors and other metal farm equipment;
- Get off and away from motorcycles, scooters, golf carts and bicycles;
- Put down fishing rods, golf clubs, metal tools and implements such as shovels, axes, pitchforks etc.;
- Stay away from wire fences, clotheslines, metal pipes, rails and other metallic paths which could carry lightning from some distance away;
- Avoid standing in small isolated sheds or other small structures in open areas;
- In a forest, seek shelter in a low area under a thick growth of small trees;
- In open areas, go to a low place such as a ravine or a valley, be alert for flash floods;
- Keep ears covered and eyes closed to protect against hearing damage and blindness due to close lightning strikes; and
- Remove jewellery, watches and other metal items as these might cause severe burns if struck by lightning.

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability to severe storm impacts. However, a severe storm would stretch the capability of these groups.

Every school, hospital, clinic and aged care facility should have a severe weather action plan and have frequent drills. People should remain indoors if threatening weather is expected, away from windows and metal piping which can serve as a conductor of electricity in the event of a lightning strike. Larger disaster kits should be prepared to cater for the anticipated numbers of people seeking shelter, and regular inspections should be carried out, drinking water replaced, batteries checked etcetera.

Vulnerability of Buildings

In the event of a severe storm there is a high probability of significant damage to houses built pre 1980, and people living in caravans, cabins or houseboats. This means that most people are in buildings which offer relatively safer shelter in the event of a severe thunderstorm. Residents in the mobile home type of structure should be notified of public shelters for early evacuation during times of severe weather.

Vulnerability of Lifelines

The most critical lifelines affected by Severe Storms are:

- The loss of electrical power, due to its flow on effect to all other services;
- The loss of communications;
- Blockages to streets and access routes for emergency and rescue vehicles due to fallen trees and other debris; and
- Over-burdening of public shelters, supplies and services in the event of prolonged or widespread damage.

Vulnerability of Critical Facilities

The loss of power would cause hardship due to the reliance of most lifelines on power, particularly the supply of drinking water and sewerage services. Loss of power to hospitals and clinics would place the entire population at risk and may require evacuations of patients. The blockage of access routes may prevent essential services such as firefighting, ambulance and police from gaining access to affected people and property.

Vulnerability of Local Economic Production and Employment

An event involving a severe storm is likely to have an impact on a localised area of the community rather than the whole community. Due to its more localised affect the impact from a single severe storm is not expected to have a long term impact on the community. However, it must be noted that the frequency of severe storms is far greater than that of cyclones, so the net combined economic impact of severe storms and the associated damage from hail, high winds and intense rainfall is much greater than cyclones.

Vulnerability of Environment

Severe storms can cause damage to the Shires mangroves which then increase the vulnerability to flooding and storm tide. Where land clearing has taken place the severe storms can increase damage due to the buffer zone being removed. Severe storms, which may include hail can generate strong winds which defoliate canopies and can cause structural changes in wooded ecosystems. Animals can either be killed or impacted indirectly through changes in habitat and food availability caused by high winds, storm surge, and intense rainfall.

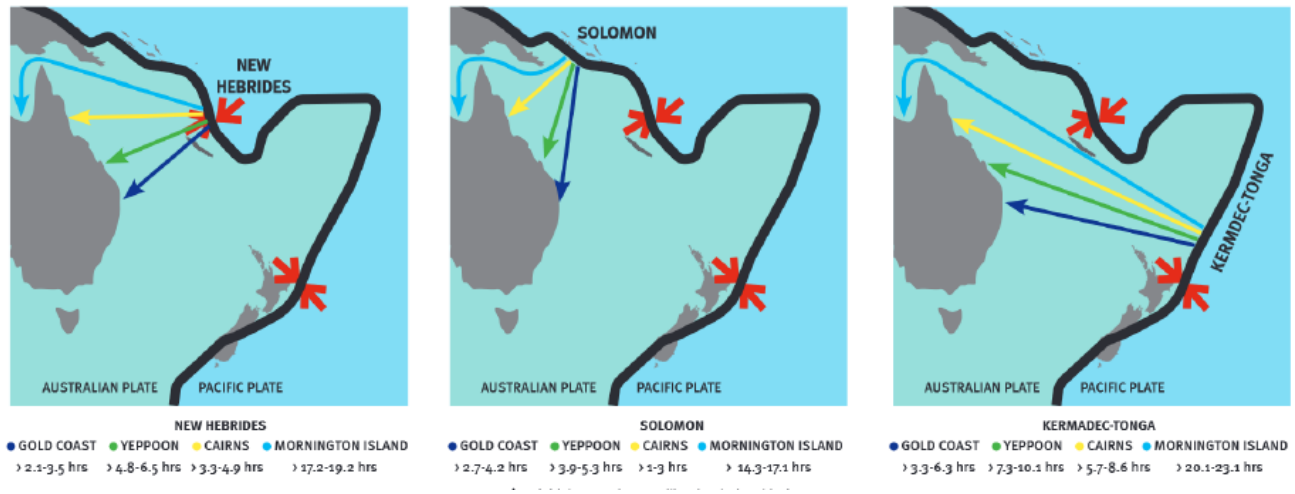
10.2.8 Tsunami

This hazard is a concern for the coastal communities such as Yeppoon, Emu Park, Keppel Sands, Joskeleigh, Kinka Beach, Rosslyn Bay, Bangalee and Stanage. It is also a concern for Great Keppel, North Keppel and Pumpkin Islands which are popular tourist destinations. Other smaller islands, offering limited protection have camping groups on them that may need evacuation, including Middle, Miall, Conical, Divided, Pelican and Humpy Islands. These destinations may have several thousand tourists between them that need to be considered as part of the emergency response to a tsunami event.

Vulnerability of People

Tsunami warnings will be issued, and it is expected that people will have some time to evacuate all coastal areas (see figure below). However, the LDMG should endeavour to make sure that people living in exposed areas are aware of the risk and of the emergency procedures in case of a tsunami. In the case of a short time period for evacuation, tsunami will be an issue for communities on the coast.

Everyone will be vulnerable. People should evacuate inland or, if evacuation time is short, should evacuate to higher grounds such as near water reservoirs which are generally placed on elevated locations. They should then be in a safe area in case of a tsunami (Keppel Sands water reservoir, Emu Park water reservoir, Rosslyn water reservoir). Also, Double Head/Bluff Point Lookout would be a safe area in case of a tsunami. Even though it is near the ocean, it is quite high. People who are on the islands should evacuate to the elevated areas of the islands. It would be recommended to evacuate to high grounds (run-up can exceeded 30 m above mean sea level as has been experienced in recent global events).



Travel time for tsunamis originating from New Hebrides, Solomon and Kermadec-Tonga trenches (Source; Chesnais et al, 2019)

Tsunami Evacuation maps are located in *Annexure G – Tsunami Evacuation Maps*.

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. The effect of a tsunami would be quite devastating to the community and sub plans including Evacuation, and Communication will cover tsunami warnings.

Vulnerability of Buildings

Vulnerable buildings along the coastline from Keppel Sands to Stanage will suffer the impacts from tsunami inundation. The coastal area could experience significant long term damage to buildings and supporting infrastructure.

Based on the Bureau of Meteorology's advice, people should evacuate to areas at least 10m above sea level or at least 1km from beaches, harbours, rivers, coastal areas etcetera. Following this advice, Council has developed maps for coastal localities from Yeppoon to Keppel Sands depicting high ground areas.

Vulnerability of Lifelines

Keppel Sands and Joskeleigh may become completely isolated during a tsunami, due to inundation of the Keppel Sands Road. These communities could not expect external assistance during an event and would need to be evacuated before significant sea level rise occurred as all of Keppel Sands and much of Joskeleigh may become inundated.
The urban areas along the coast may become fragmented with tsunami sea level rise potentially (depending on height of rise) cutting the Scenic Highway along the Coast at following locations:

- Ross Creek (also affects Tanby Road and Taranganba Road);
- Cooee Bay;
- Lammermoor Beach;
- Statue Bay;
- Causeway;
- Kinka Creek (Shoalwater Creek); and
- Fig Tree Creek.

The Rockhampton-Emu Park Road is likely to be affected by tsunami in Cawarral Creek which flows through to Coorooman Creek. Alternative inland access (where this access exists) areas likely to be inundated and isolated include;

- Emu Park and Zilzie;
- Kinka Beach;
- Residential area north of the Causeway;
- Rosslyn Bay and part of Statue Bay;
- South end of Lammermoor Beach and northern end of Statue Bay;
- Taranganba, south end of Cooee Bay, and north end of Lammermoor beach;
- North end of Cooee Bay;
- Parts of Yeppoon;
- Bangalee; and
- Stanage.

Access to areas north of Yeppoon may become affected by tsunami with impacts to Farnborough Road surrounding Barwell's Creek.

Other access issues arise with the bottom end of Pinnacle Street, Causeway Lake being very low (currently street kerb and channel is affected by HAT), the only vehicle access path into this cul-de-sac.

During a tsunami this access would be rapidly blocked to conventional vehicles.

Roads
Inundation of roads on the coast will occur in the event of a tsunami. Flow velocities are expected to be extremely high, causing scour of road pavements/footpaths and major road infrastructure damage.
Long term inundation of roads and footpaths (approximately 12 hours) may allow the underlying road pavements and subgrade to become waterlogged, resulting in a softening of the pavement structure.
When the inundation has receded, it is recommended that vehicle use on recently inundated roads be restricted to single axle vehicles and emergency vehicles. Heavy or commercial vehicles, not required for emergency access, should be prevented from travelling on the affected roads until the pavements have regained sufficient strength. This time can vary considerably and is particularly dependent on the type of subgrade material. It is therefore recommended that Council engineers be consulted before unrestricted access is permitted.

Sewer
During inundation, sewerage inflows tend to increase dramatically due to illegal stormwater connections and groundwater ingress. It could be expected that this could also be the case during periods of tsunami inundation.

Areas south of Rosslyn Bay and north of Emu Park and Keppel Sands are not connected to sewage. Some damage to individual septic systems due to seawater ingress or flotation of septic tanks can be expected. Seawater ingress would stop or hinder treatment of sewage in the tank, and result in release of essentially untreated waste into absorption trenches in saturated ground. Septic systems are typically private infrastructure (except for public toilets) but release of sewage has major public health implications.

Electrical
The electrical infrastructure in the areas includes overhead and underground reticulation owned by Energy Queensland to provide electricity supply.

Communications
The Telstra infrastructure is all underground reticulation. The system is therefore designed and installed to be robust against the ingress of water. The pit and conduit system is regularly inundated with water as part of the natural storm water dissipation. The cables and cable joints used are grease filled which can be submerged in low level water with no adverse effects. The cable connection pillars, which are located above ground, are also sealed and positively pressurised to prevent the ingress of water, however are not submersible.

Vulnerability of Critical Facilities

Based on the Council tsunami inundation maps public buildings at risk include;

- Council offices Anzac Parade, John Street (Community Development Centre, Strengthening Family Connections and Yeppoon Library);
- Emu Park – Library, QPS, SES, QERS, QAS, Airstrip, and
- Keppel Sands – the whole area is at risk of inundation.

Vulnerability of Local Economic Production and Employment

An event involving a severe tsunami, depending on the severity, could have a long term impact on the area economically and upon employment levels should significant damage occur – this is however considered to be a very unlikely event.

Vulnerability of Environment

A tsunami changes the landscape. It uproots trees and plants and destroys animal habitats such as nesting sites for birds. Land animals are killed by drowning and sea animals are killed by pollution if dangerous chemicals are washed away into the sea, poisoning the marine life. The push of saltwater into freshwater sources nearby can disrupt farming.

A large amount of waste is accrued by the demolishing of bridges, buildings, etc. during tsunamis. These wastes have a large number of minerals, hazardous materials, and construction materials. These toxic substances and hazardous materials can accidentally mix up with ordinary rubble. These include oil fuel, chemicals, industrial raw materials, and asbestos.

The tsunami may also have a devastating effect on the Great Barrier Reef. Its wave would go up as it entered shallow water and mash into the coral reef. This force of the tsunami wave itself could destroy the reef. As the wave goes back into the sea, it will bring out a lot of debris including trees, concrete containers, mud, and so on. This heavy rubble would hit the reefs again forcefully, destroying the weak coral reefs. The mud can also land on the coral, thereby suffocating it.

10.2.9 Tornados

In this section, wind hail and lightning hazard vulnerability are considered. The associated flooding hazard vulnerability is covered under Floods.

Vulnerability of People

People at most risk to tornados are:

- People in vehicles;
- The elderly, very young, and the physically or mentally impaired;
- People in mobile homes; and
- People who may not understand the warning due to a language barrier.

Vulnerability of Social Structures

The Livingstone Shire area is well served with community groups which would help to decrease the level of vulnerability. However, a tornado strike would undoubtedly stretch the capability of these groups, particularly as there may be little or no advance warning within which to mobilise groups.

Every school, hospital, clinic and aged care facility should have a severe weather action plan and have frequent drills. People should remain at school, hospitals or places of business beyond regular hours if threatening weather is expected. In the event of a tornado, people are safer in buildings than in a train, bus or car.

Vulnerability of Buildings

Pre-1980 buildings are vulnerable to a tornado with a high probability of significant damage from wind and secondary hazards associated with wind borne debris due to the building materials and methods in use. Damage can occur from high winds with rain, hail and lightning strikes to buildings. Tornados are site specific so the number of houses/people that are affected will vary significantly from location to location.

Vulnerability of Lifelines

The most critical lifelines affected by tornados are:

- The loss of electrical power, due to its flow on effect to all other services;
- The loss of communications; and
- Blockages to streets and access routes for emergency and rescue vehicles due to fallen trees and other debris.

Vulnerability of Critical Facilities

The loss of power would cause hardship due to the reliance of most lifelines on power, particularly the supply of drinking water and sewerage services.

The blockage of access routes may prevent essential services such as firefighting, ambulance and police from gaining access to affected people and property.

Vulnerability of Local Economic Production and Employment

An event involving a tornado is likely to have an impact on a localised area of the community rather than the whole community which is the likely scenario in a severe cyclone. This impact may be locally devastating, with costs running into the millions of dollars. As tornados are relatively localised in affect, it is not expected to have a long term impact on the community unless significant damage is caused to key industries.

Vulnerability of Environment

Tornados can cut through massive swaths of forest, destroying trees and wildlife habitat, and open up opportunities for invasive species to gain ground. Disposal problems can result from types or amounts of debris but also from hazardous or toxic substances in the debris that can contaminate air, water, land, and food if not handled properly.

10.2.10 Heatwave

Vulnerability of People

Improved public awareness has led to a significant decrease in the vulnerability of the population to heatwaves. Implications for improved safety are communicated through widespread media coverage and information released through health care institutions. Other measures which have improved resilience of communities to heatwave risk include the use of air-conditioners, better housing design, better clothing, a trend towards more people working indoors, education, behavioural adaptations and extended temperature forecasts to seven days.

People's vulnerability to heat depends on:

- Climatic factors (such as the frequency of heatwaves);
- Age;
- Gender;
- Pre-existing disease;
- Use of certain medications;
- Level of hydration;
- Living alone;
- Housing condition (building type or living on a higher floor);
- Presence and use of air-conditioning in the home or residential institution; and
- Physiological adaptation exposure to heat wave (density and duration).

The Human and Social Services Taskforce provided insight across 2017 / 2018 season. Currently, babies, outside workers and the elderly were presenting most at the local hospital and general practitioners.

Consideration has been given to education and awareness of new parents who are an emerging risk. The Queensland health heatwave management subplan considers vulnerable people.

https://www.health.qld.gov.au/__data/assets/pdf_file/0032/628268/heatwave-response-plan.PDF?_=20231030

Vulnerability of Social Structures

The Livingstone Shire is well served with community groups which would help to decrease the level of vulnerability. Every school, hospital, clinic and aged care facility should have a heatwave Action Plan and have the necessary equipment and supplies available during the high-risk period from November to March.

Vulnerability of Buildings

Pre-1980 dwellings may have been retrofitted with air conditioners and most householders have fans and insulation. The possibility of energy demand overload during heatwaves may lead to power failure. Overheating of electrical and/or mechanical equipment due to inadequate air-conditioning may lead to malfunction and fires.

Vulnerability of Lifelines

The most critical lifelines affected by heatwaves are:

- The loss of electrical power, due to its flow on effect to all other services; and
- Inability to maintain air-conditioned living spaces leading to heat stress in vulnerable individuals.

Vulnerability of Critical Facilities

The loss of power would cause hardship due to the reliance of most lifelines on power, particularly the supply of drinking water and sewerage services.

Vulnerability of Local Economic Production and Employment

Heatwaves may cause damage to crops and loss of livestock. The heatwave impacts upon the local agricultural sector will depend upon the severity and extent of the heatwave, and the potential impacts upon crops and livestock. It may result in the total or partial loss of crops.

Vulnerability of the Environment

Heatwaves without rain can lead to water shortages and increased stress for plants. This has the effect of reducing plant growth, the basis of energy production, the food chain, with an overall drying out of the landscape. Flying foxes which are accustomed to shady understories will fan their wings, pant and spread saliva across their bodies, however this may not combat the effects of a heatwave. A heatwave in Far North Queensland caused a mass mortality event of more than 4000 bats, leading to an unforeseen public health consequence.

PART 11. CAPACITY BUILDING DISASTER MANAGEMENT PERSONNEL

11.1 Training

The provision of, and attendance at, education and training is a key preparedness and capability building activity for those involved in disaster and emergency management work. QFD has a responsibility identified in the Act and State Plan to ensure that persons performing functions under the Act in relation to disaster operations are appropriately trained. QPS Emergency Management has developed a Queensland Disaster Management Training Framework (QDMTF), identifying courses that are to be undertaken by those persons. Disaster management training is important to ensure that all agencies can seamlessly integrate within the regions disaster management arrangements and contribute to an effective and coordinated response.

Each member agency is responsible for ensuring that staff undertaking disaster and emergency management work have or plan to have received appropriate training for their roles, in particular those courses identified in the Training Framework.

The LDC is responsible for identifying and supporting attendance at relevant training for LDMG members and the LDCC team.

11.1.1 Accredited Training

This Plan identifies a preference for vocational education and training that is accredited or is a qualification or individual units of competency under the Australian Qualifications Framework (AQF). The AQF is the system that identifies the various levels of educational qualifications in Australia. Disaster and emergency management specific training is contained within the “Public Safety Training Package”.
Training available for members of the Livingstone Shire LDMG and Coordination Centre staff includes:

- QPS-EMC provided courses from the QDMTF;
- Courses from the Public Safety Training Package provided for example by QFD or SES trainers or other training providers; and
- Accredited programmes such as courses from the Public Safety Training Package can involve assessment which will include a Desktop Discussion or Coordination Centre exercise. The assessment task involves an emergency situation scenario enacted to train and test staff on their ability to apply their knowledge to procedures, processes and systems.

11.1.2 Training for work in Disaster Coordination Centres

Each lead agency is to have an appropriate number of staff trained at the appropriate skill and competency level to work in a Disaster Coordination Centre. This will greatly assist with the effective coordination of disaster operations.

Appropriate courses for working in a disaster coordination centre include:

- Australasian Inter-service Incident Management System (AIIMS) course. AIIMS courses are 2 days (theory programme with some scenario work). QF and Council have some capacity to provide this course to staff that may be required to work in a Coordination Centre;
- Public Safety Training including; coordinate resources within a multi-agency emergency response. This course examines a range of issues that impact emergency coordination, culminating in a major coordination centre exercise where participants will have a chance to experience the management of a major emergency in a realistic, simulated environment; and

- QPS-EM Disaster Coordination Centre courses form the Training Framework.

11.2 Exercise

The Standard for Disaster Management in Queensland (the Standard) supports the broad role that exercises play in improving disaster management. The accountability for "capability" is characterised as 'how the entity is using training and exercising to help embed the necessary culture change and improve performance to meet disaster management outcomes'.

Exercises are a mechanism to review the effectiveness of disaster management plans in Queensland, maintain readiness for events and improve practice. Entities have a range of responsibilities to review plans, and participate in exercise management (the design, planning, conduct, and evaluation of exercises).

Prior to participating in disaster and emergency exercises it is preferred that participants have received training as outlined in this Plan. This is so that participants have a basic understanding of the policies and procedures that apply to working in a disaster management environment and that the experience and learning's from the exercise can be maximised.

11.2.1 Exercise Program and Type

Each year one or more of the following exercises shall be held:

- An exercise determined by the lead agency designed to test the lead agency's response coordination capability;
- A tabletop discussion exercise, with the focus of the exercise to be determined by the District or Local Group;
- An LDCC exercise with the focus of the exercise to be determined by the LDC or Local Group;
- A small-scale exercise involving the testing of a single element of the capacity of the LDCC;
- A small-scale exercise involving the testing of the Evacuation Centre Support Operational Plan;
- A joint LDCC/DDCC Livingstone Shire Local Disaster Management Exercise with the focus of the exercise to be determined by the LDMG and DDMG.

Exercises can be small scale one to two hour activities through to a three-day event. More frequent smaller exercises can be an effective alternative to a single large-scale activity.

11.2.2 Exercise Evaluation

An exercise is to be followed by a debrief process. A hot debrief is to be conducted immediately following the conclusion of the exercise and a cold debrief conducted not longer than a month following the exercise. The cold debrief allows participants time to provide a more considered view of the exercise outcomes.

The learning's from the exercise are to be consolidated into a plan for action.

11.3 Post Disaster Assessment

The review of operational activities undertaken during a disaster is a key component of developing capacity and the improvement of disaster management arrangements.

Post-disaster assessments (also known as after action reviews) are conducted to:

- Assess disaster operations undertaken for a given disaster including actions, decisions or processes;
- Document those processes that worked well and identify a course of action to ensure that they are captured and updated in relevant plans for use in the next operation; and
- Assess capability and consider where additional planning, training and/or exercises may enhance capability.

The review of operations is conducted through two forms of debrief:

Hot debrief

Undertaken immediately after operations are complete, giving participants the opportunity to share learning points while the experience is still very fresh in their minds. Multiple hot debriefs during protracted operations may be appropriate to identify significant issues and provide prompt solutions for immediate implementation.

Post event debrief
Held days or weeks after an operation, when participants have had an opportunity to take a considered view of the effectiveness of the operation. A Post Disaster Assessment Report is to be completed in partnership with QPS Emergency Management to provide an overview of the lessons identified following an event and importantly recommendations for improving disaster management.

Following a Post Disaster Assessment, the Local Group may need to consider issues for resolution or may need to refer an issue to the District Group for advice or resolution.

PART 12. PREVENTION STRATEGY

The Act defines prevention as the taking of preventative measures to reduce the likelihood of an event occurring or, if an event occurs, to reduce the severity of the event.

12.1 Disaster Mitigation

Disaster mitigation is the means taken in advance of or after a disaster aimed at decreasing or eliminating its impact on communities, the economy, infrastructure and the environment. The objective of prevention and disaster mitigation activities is reduced risk and vulnerability through initiatives to enhance community resilience and sustainability.

Prevention and disaster mitigation can be, in part, achieved through application of building codes, planning policies and legislation.

Building Codes, Building Use Regulations, Planning Policies, that are relevant and apply include:

- *Building Act 1975;*
- *Building Regulation 2021;*
- Queensland Development Code;
- *Building Fire Safety Regulation 2008;*
- *Body Corporate and Community Management Act 1997;*
- *Building Units and Group Titles Act 1980;*
- *Building and Other Legislation Amendment Bill 2022;*
- *Queensland Building and Construction Commission Act 1991;*
- Queensland Coastal Management Plan;
- *State Planning Policy 2017;* and
- *Livingstone Shire Planning Scheme 2018.*

12.2 Legislation

In addition to the *Disaster Management Act 2003* legislation relevant to disaster management includes:

- *Agricultural Chemicals Distribution Control Act 1966;*
- *Ambulance Service Act 1991;*
- Local and Subordinate Local Laws;
- *Chemical Usage (Agricultural and Veterinary) Control Act 1988;*
- *Coastal Protection and Management Act 1995;*
- *Environmental Protection Act 1994;*
- *Biosecurity Act 2014;*
- *Explosives Act 1999;*
- *Fire and Emergency Service Act 1990;*
- *Gas Supply Act 2003;*
- *Information Privacy Act 2009;*
- *Land Act 1994;*
- *Liquid Fuel Supply Act 1984;*
- *Local Government Act 2009;*
- *Major Sports Facilities Act 2001;*
- *Marine Parks Act 2004;*
- *Native Title (Queensland) Act 1993;*
- *Nature Conservation Act 1992;*
- *Queensland Reconstruction Authority Act 2011;*
- *Petroleum Act 1923;*
- *Police Powers and Responsibilities Act 2000;*
- *Public Health Act 2005;*
- *Public Safety Preservation Act 1986;*
- *Right to Information Act 2009;*
- *Planning Act 2016;*
- *Terrorism (Commonwealth Powers) Act 2002;*
- *Water Act 2000;*
- *Water Supply (Safety and Reliability) Act 2008;* and
- *Work Health and Safety Act 2011.*

12.2.1 Insurance

In a disaster there is significant impact on the whole community caused by under insured and non-insured properties. Many people find out too late that they do not have the right insurance for their property. Additionally, the cost of materials and availability of qualified tradespersons has compounded the recovery and re-building efforts of residents. It is considered that this is an issue for the insurance industry and the State Government with input from the Local Group through its members.

12.2.2 Land Use Management Initiatives

The *Livingstone Planning Scheme 2018* was adopted by Council on 5 April 2018 and commenced on 1 May 2018. On 19 June 2018, Council adopted Version 2 of the planning scheme. Version 2 of the *Livingstone Planning Scheme 2018* commenced on 25 June 2018 and it includes a Local Government Infrastructure Plan (LGIP).

PART 13. RESPONSE STRATEGY

13.1 Response Capability

The principle purpose of emergency response is the preservation of life, property and the environment. Response is defined as the "actions taken in anticipation of, during and immediately after an emergency to ensure its effects are minimised and that people affected are given immediate relief and support" (Australian Institute Disaster Resilience, Glossary).

The LDMG recognises that the response to a disaster event:

- Needs to incorporate all those actions that help reduce loss of human life, illness or injury to humans, property loss or damage, or environmental damage to a particular and specific disaster event;
- May commence prior to the impact of an event, if advance warning is given and known; and
- Concludes once the risks of loss of human life, illness or injury, property loss or damage, or environmental damage are reduced to an acceptable level.

The LDMG has a strong response capability in that it is well equipped, well staffed and has a reliable assembly of resources including access to:

- Livingstone Shire Council response and equipment resources;
- Queensland Ambulance Service response and equipment resources;
- Queensland Fire Department response and equipment resources;
- Queensland Police Service response and equipment resources;
- State Emergency Service response and equipment resources;
- Access to equipment (including heavy equipment) and plant within Council and through commercial providers, which is accessible through the LDCC Logistics Team;
- Personal Protective Equipment held by lead agencies; and
- Volunteers of the many community organisations within the region.

Agencies listed have appropriate resources to deliver their agreed roles and responsibilities.

13.2 Warning Notification and Dissemination

Most warnings are received from the BoM via email, text message or if the risk is substantial and imminent, by telephone. These warnings are received by the LDMG members and relevant LSC officers.

If a weather forecast shows the potential for a hazard to develop e.g. a Tropical Cyclone, the situation is monitored closely by the nominated LDMG members. Dependent on the risk (likelihood of the event impacting the community and consequence if it does), the LDMG may activate and the details of the forecast or warning will be disseminated to all the LDMG members.

Additionally, all media outlets will be notified according to the Communication Sub plan to distribute the information to the community.

13.2.1 Standard Emergency Warning Signal (SEWS)

In 1999, an agreement was reached between all States and Territories on the need for a Standard Emergency Warning Signal (SEWS) to be used in assisting the delivery of public warnings and messages for major emergency events. The signal used for the SEWS is the existing BoM Tropical Cyclone warning signal.

SEWS is intended for use as an alert signal to be played on public media to draw listener's attention to a following emergency warning. It is meant to attract listener's attention to the fact that they should take notice of the emergency message.

Responsibility for the management of the SEWS in Queensland rests with the Commissioner Queensland Police Service in conjunction with the Queensland Regional Director of the BoM for meteorological purposes.

13.2.2 The National Emergency Alert SMS (short message service) system

This system will also be in operation but only instigated in the local area after consultation with the LDC and the DDC and authorised by the Chairperson of the LDMG where it is the Principle Control Authority and in accordance with the Emergency Alert Guidelines. Emergency Alert templates and campaigns are saved on the Disaster Management Portal.

All messaging needs to be cohesive and accurate. Within the LDCC, once activated, all media and communications will be managed by the Public Information officer/team.

13.2.3 Local Warnings/Information

LDMG members will receive warning products via several means:

- The DDC will receive notification directly from the State Disaster Coordination Centre (SDCC) and internally through Queensland Police Service Communication Centres and will ensure the dissemination of warnings to vulnerable LDMGs within the district;
- The LDMG will be notified by email and may also receive notification from internal agency central offices; and
- A number of agencies will also receive warnings directly from the BoM.

Details regarding responsibility for notification processes within LDMG member agencies are detailed in respective agency plans. Agency plans will include detailed contact registers to achieve dissemination of warnings.

The release of information to the community regarding the emergency, and associated threats, is the responsibility of the Chairperson of the LDMG or his/her delegate upon recommendation of the Principle Control Authority for the particular event. Warnings of events are forwarded to the LDC who in turn collates all necessary warnings, advice and information for distribution to the community through radio, television and social media networks.

13.2.4 Types of Warnings

- Media warnings – social media platforms, internet sites, radio, television and local newspapers;
- Livingstone Shire disaster dashboard;
- Text messaging that targets residents on Council's database (Guardian IMS broadcasts);
- Telephone warnings via Emergency Alert system (when activated);
- Door-knocking by police and other emergency service agencies; and
- Warning devices – horns; sirens; loud-hailers.

Should a mandatory evacuation be ordered, along with media broadcasts, the SES, Police and other authorised emergency agencies may do street by street broadcasting using hailers.

13.3 Activation

13.3.1 Activation of LDMG

The Chairperson of the LDMG has responsibility for activating the LDMG and the LDCC and determining the stage of activation required.

Activation will normally occur:

- As a response to a worsening situation and is thus responsive to an alert warning system;
- Because of other circumstances, where no warning is possible;
- At the request of the responsible lead agency/control authority;
- At the direction or request of the DDC; and
- At the discretion of the LDMG Chairperson upon becoming aware of a threat or potential threat to the communities of the Livingstone Shire.

13.3.1.1 Activation

Activation occurs following consultation with the Chair of the LDMG and the DDC. The LDC is responsible for notifying the LDMG members of an activation. The four levels of activation are:

Alert	A heightened level of vigilance due to the possibility of an event in the area of responsibility. No action is required however the situation should be monitored by someone capable of assessing the potential of the threat.
Lean forward	An operational state prior to 'stand up' characterised by a heightened level of situational awareness of a disaster event (either current or impending) and a state of operational readiness. Disaster coordination centres are on stand by; prepared but not activated.
Stand up	The operational state following 'lean forward' whereby resources are mobilised, personnel are activated and operational activities commence. Disaster coordination centres are activated.
Stand down	Transition from responding to an event back to normal core business and/or recovery operations. There is no longer a requirement to respond to the event and the threat is no longer present. Meetings may still occur targeting recovery operations.

The local levels of response activation are outlined at *Annexure E – Stages of Activation – Response Operations*.

13.3.1.2 Local Disaster Coordination Centre

Livingstone Shire Local Disaster Coordination Centre is located at the Centre of Excellence for Disaster Management, Innovation and Community Resilience (7-9 James Street, Yeppoon QLD). A Sub Plan has been developed with full details of the LDCC operations.

Activation of Subcommittee

Chairpersons of Subcommittees also have the discretion to activate the relevant group as deemed necessary. However, the decision to activate a Subcommittee should be done, where possible, after consultation with the LDC and/or Chairperson of the LDMG.

13.4 Concept of Operations for Response

13.4.1 Operational Reporting

For the Queensland Disaster Management system to function effectively, reporting lines must be strictly adhered to.

The demand for information increases substantially during times of activation, and this can be driven by political or media demands. Whilst the LDMG accepts these demands and will facilitate requests for information it must not allow the reporting system to be circumvented.

The LDMG's are to report to the District Disaster Management Group (DDMG). In turn the District Group will report to the State Group. The Local Group should not report directly to the State group and all requests for information must go through the District Group. Individual agencies have two reporting obligations:

1. Each agency must report all activities to the Chair and LDC of the group. Without this information full situational awareness cannot be achieved. Reporting must be in writing surmising the activities of the agency.
2. Each supporting agency has a responsibility to keep their normal command structure informed of their actions and activities. The structure and nature of this reporting is by individual arrangement.

In turn, the LDCC has a responsibility to keep all the members of the LDMG informed of the situation. It is unusual that all agencies will be required to support activation. The LDC is responsible to ensure that all members of the LDMG receive situation reports and up to date information.

13.5 Financial Management

Disaster related finances are not normally included in the budgetary process of the Council or other responding agencies. However, disaster events happen and may require the allocation of substantial funds consequently.

Due to the nature of many disaster situations, finance operations will often be carried out within compressed time frames and other pressures, necessitating the use of non-routine procedures; this in no way lessens the requirement for sound financial management and accountability.

It is important to remember that a Declaration of a Disaster Situation is not a pre-requisite for the reimbursement of expended funding.

The LDCC and the Livingstone Shire Council must maintain proper financial records during a disaster. In the event of a disaster situation the Council's normal procedure for expenditure should be followed. A purchase order is raised and all expenses captured in that cost code.

Expenses should be recorded in the following three categories; Labour, Plant Hire, Materials and Services.

13.5.1 Support Agencies

Each support agency is responsible for providing its own financial services and support to its response operations in the field.

13.5.2 Authority/Delegation to Expend Funds

The LDC can authorise financial expenditure if required. The LDC undertakes consultation with the relevant Council's senior management, the DDC and QPS-EM before any major outlay.

13.5.3 Authorised Expenditure

Individual authorised limits shall be as per normal delegation. The determination of the limit of expenditure permitted without further reference to senior management by the LDC shall be decided by the CEO.

13.5.4 Recording of Expenses

When an event occurs, Council should immediately begin accounting for labour, plant hire, materials and services relating to the disaster response. All disaster-related expenditure should be recorded in a cost code specifically raised to deal with the event/disaster. The cost code should have separate provision for capturing expenses incurred on Council land and those on private land (activity numbers and natural accounts). Provided all expenditure is directed through Councils existing financial programme and uses current work practices any claim for reimbursement can be supported.

Whilst innovative and expeditious means of procurement are called for during times of disaster events, it is still mandatory that all expenses are directed to the purchase order/cost code to safeguard the use of public funds from the potential of fraud, waste or abuse.

13.5.5 Recouping of Funds

Provided the Minister for Emergency Services has approved the activation of the Commonwealth/State Disaster Recovery Funding Arrangements (DRFA) the Local Governments can submit a claim for costs incurred to recover from a disaster event. Where costs have been incurred on Council land the local government can claim 75% of the cost incurred to remove, dispose and restore public assets provided those assets are not covered by insurance. For instance, the removal and disposal of damaged vegetation from roads, parks, foreshores and reserves is covered under this area.

Where costs have been incurred on private land the local government can either undertake the work or reimburse the property owner for the costs incurred to remove and dispose of vegetation blocking driveway access or posing an ongoing hazard to buildings or people on the property. The local government can claim 100% of the cost incurred.

13.5.6 Disaster Recovery Funding Arrangements

Trigger points apply to Disaster Recovery Funding Arrangements (DRFA) Reconstruction of Essential Public Assets (REPA) relief measure, which includes emergency works and reconstruction works. Trigger points are calculated based on a percentage of net general rates and are capped at $2.2 million. Trigger points have two purposes:

1. Eligible REPA damage must exceed a local government's trigger point for it to be activated for REPA under the DRFA.
2. A local government must contribute up to its trigger point amount for eligible works above.

The DRFA trigger point for Livingstone Shire is determined annually by the relevant State Government Department (usually the one responsible for Local Government) and is published in the DRFA Booklet. This is usually available in November each year. Refer to the booklet: "Disaster Recovery Funding Arrangements" which deals with claimable expenditure.

13.6 Media Management

The activation of the Public Information Cell aligns with activation of the LDMG. The LDMG Chair or his/her delegate has authority to activate the LDMG on receipt of:

- A warning or an impending threat, which in the opinion of the Chairperson or their delegate, requires a coordinated community response;
- A request from a Control Authority for assistance under the LDMP; and
- A direction or request by the District Disaster Coordinator (DDC).

13.7 Accessing Support and Allocation of Resources

Incidents, events, emergencies and disasters of local or regional scope which can be managed using regional resources are to be coordinated and managed by ICC's and the LDCC.

13.7.1 Requests from the Lead Agency ICC to the LDCC

Upon the activation of the lead agency's ICC the Local Disaster Coordinator (LDC) shall determine the requirement for the activation of the LDCC. If the LDCC is activated, then the LDC will deploy a LDCC Liaison Officer to the ICC. The Incident Controller at the ICC is to contact the LDCC when additional resources are required for the response, resources which are not available from the lead or support agencies in attendance at the ICC for the response.

The ICC can make such requests through the LDCC Liaison Officer or that Agencies Liaison Officer at the LDCC. The LDCC is to be proactive in its planning for requests for additional resources for the region.

13.7.2 Requests to DDC for Assistance/Support

When the LDMG under the management or availability of the Local Group member agencies are exhausted or overwhelmed or a specific technical resource or capability is not able to be located or available, the LDC is to contact the DDC so that resources can be accessed or made available, by the SDCC using the process that has been advised by the DDC to the LDC. All requests for assistance to the DDC shall go through the LDC or delegate. The LDCC will be proactive in informing the DDCC if it is likely that requests for additional resources are to be so that in turn the DDCC can also be proactive in its planning for requests for additional resources for the region.

13.7.3 Requests to SDCC for Assistance/Support

When the DDCC is not able to action or fulfil requests for assistance the DDC will request assistance from the Operations Officer, SDCC.

13.7.4 Support from External Agencies (Public & Private)

Support may be sourced from:

- Member agencies preferred suppliers as per the list of suppliers held by that agencies' procurement unit;
- All emergency service providers both Government and Non-Government agencies;
- A request through the agency Liaison Officers or via the usual member agency procedures; and
- The SDCC or the DDCC may allocate and push resources forward to the Region during an event even though resources have not been requested by the LDCC. The staging and reception of these resources will require planning and coordination by the LDCC.

Should support, as described above, be withdrawn for whatever reason, all agencies affected will receive advice from the LDCC.

13.8 Disaster Declaration

In accordance with s64 and s69 of the *Disaster Management Act 2003*, a DDC may, with the approval of the Minister of the State, declare a disaster situation for the district or one or more local government areas within the district in whole or in part, or by the Premier and the Minister for the State or a part of the State. As outlined in s75 and s77 of the Act, the declaration confers extra powers on particular groups to perform actions, give directions and control movements within the declared area.

A declaration may be made if the person/s responsible for making it are satisfied that a disaster has happened, is happening or is likely to happen and it will be necessary, or reasonably likely to be necessary, to exercise declared disaster powers to prevent or minimise the loss of human life, illness or injury to humans, property loss or damage, or damage to the environment.

Before declaring a disaster situation the person/s responsible for the declaration is to take reasonable steps to consult with local government in the proposed declared area.

In accordance with the Act, a declaration must be in the approved form, or can be made orally if necessary to exercise declared disaster powers before an approved form can be obtained and completed. An oral declaration cannot be made if the DDC is satisfied only that it is reasonably likely to be necessary to exercise declared disaster powers. If the declaration is made orally, it must be recorded in the approved form as soon as is reasonably practicable.

Part 4 of the Act outlines the provisions for declarations and disaster powers. Disaster management forms, including forms for disaster declaration, extension, request to end and for the authorisation of persons to exercise declared disaster powers etcetera are available at: https://www.disaster.qld.gov.au/dm-support-toolkit A Declaration of a Disaster Situation may be requested, for example, where there is an identified need to undertake a managed evacuation, from the Chairperson or LDC to the DDC, using the agreed forms as referenced above that are available within the LDCC.

When a Declaration of a Disaster Situation is enacted, the Chairperson and LDC will continue to align local strategies and arrangements with the DDC to ensure the appropriate utilisation of the powers within the local disaster management arrangements. The declaration of a disaster situation does not impact the requirements of a local government under the Act to manage disaster operations in their area.

13.9 Resupply

When planning and conducting resupply operations, essential goods are to be provided. A Resupply Sub Plan has been developed. The supply of essential goods to individuals will fit within three distinct categories:

- **Isolated Community Resupply:**
  This type of resupply operation is used when the persons residing in that community have ready access to retail outlets however the retail outlet is unable to maintain the level of essential goods required due to normal transport routes being inoperable as a result of an event.
- **Isolated Rural Properties Resupply:**
  For the purposes of these guidelines isolated rural properties are groups of individuals that are isolated from retail facilities due to normal transport routes being inoperable as a result of an event. This may include primary producers, outstations or small communities that have no retail facilities.
- **Resupply of Stranded Persons:**
  This type of resupply operation is undertaken to provide essential goods to individuals that are isolated from retail facilities and are not at their normal place of residence. This normally pertains to stranded travellers and campers.

13.10 Hazard Specific Arrangements

State departments or agencies have primary responsibility to address certain hazards as detailed in the State Disaster Management Plan.

Hazard specific planning is required across all aspects of Disaster Management (PPRR). Coordination and operational procedures for specific hazards may be different to those for disaster management.

Agency specific coordination centres may be established in addition to Local, District and State coordination centres and internal structures, including the passage of information and resources may be managed using different processes. Primary agencies also have a role to ensure hazard specific plans link to corresponding national hazard specific plans and arrangements and that appropriate communication and relationships with their counterparts at the national level are maintained.

The following table outlines the primary agencies responsible for each specific hazard and the respective state and national level plans, where appropriate.

Specific hazard	Primary Agency	State and National Plan
Animal and plant disease	Department of Agriculture and Fisheries	Australian Veterinary Emergency Plan (AUSVETPLAN) Australian Aquatic Veterinary Emergency Plan (AQUAVETPLAN) Australian Emergency Plant Pest Response Plan (PLANTPLAN) Biosecurity Emergency Operations Manual (BEOM)
Biological (human related)	Queensland Health	State of Queensland Multi-agency Response to Chemical, Biological, Radiological Incidents
Bushfire	Queensland Fire Department	Wildfire Mitigation and Readiness Plans (Regional)
Chemical	Queensland Fire and Rescue Service	State of Queensland Multi-agency Response to Chemical, Biological, Radiological Incidents
Influenza Pandemic	Queensland Health	Queensland Pandemic Influenza Plan National Action Plan for Human Influenza Pandemic
Ship-Sourced Pollution	Department of Transport and Main Roads	Queensland Coastal Contingency Action Plan, National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances
Radiological	Queensland Health	State of Queensland Multi-agency Response to Chemical, Biological, Radiological Incidents
Terrorism	Queensland Police Service	Queensland Counter-Terrorism Plan National Counter-Terrorism Plan

PART 14. RECOVERY STRATEGY

Disaster recovery is the coordinated process of supporting affected individuals and communities in the reconstruction of the physical infrastructure, restoration of the economy and of the environment, and support for the emotional, social, and physical wellbeing of those affected.

Recovering from an event includes the following:

- Providing relief measures to assist persons affected by the event who do not have resources to provide for their own personal wellbeing;
- Restoring essential infrastructure in the area or areas affected by the event;
- Restoring the environment in areas affected by the event;
- Providing personal support to individuals affected by the event, including temporary hospital accommodation, emergency medical supplies, material assistance and counselling services; and
- Supporting community development activities to restore capacity and resilience.

A community that is prepared for disasters by having necessary arrangements in place will be a more resilient community and one that will return to the pre-disaster state more quickly than a community that is not prepared.

As part of Queensland's disaster management arrangements, local disaster management groups are responsible for disaster recovery operations in collaboration with identified functional lead agencies. Recovery arrangements need to be flexible to best suit local needs, and to use resources effectively.

Recovery arrangements also need to:

- Acknowledge that recovery is a complex social and developmental process rather than just remedial in nature;
- Recognise that recovery should be consequence-driven and presents an opportunity to support the communities improve beyond what existed pre-disaster; and
- Support community self-determination and participation in the recovery process.

An event that requires significant recovery also provides the opportunity to make a community more resilient for future events. For example, in an event that causes significant damage to community infrastructure, the reconstruction phase could consider integrating improved mitigation measures (e.g. flood risk reduction measures) to reduce the risk of a future event damaging the infrastructure.

14.1 Recovery & Resilience Sub Plan

Livingstone Shire Recovery and Resilience Sub Plan involves the following six key elements of recovery.

- **Recovery Coordination and Management**:
  Recovery will need to be properly organised, resourced and funded. Business as usual needs to continue, however a reprioritisation will be required. The Local Disaster Management Group is to ensure a Local Recovery Coordinator works with all levels of government to ensure resources are available.
- **Human-Social Recovery:**
  Includes personal support, psychological services, temporary accommodation (not evacuation centres), financial assistance and repairs to dwellings. The Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts are the functional lead agency for community recovery in a disaster event;
- **Economic Recovery:**
  Includes recovery as it relates to business impact, industry impact and worker impact. The Department of Tourism and Sport is the functional lead agency for economic recovery;
- **Built Recovery:**
  Includes government structures, essential services and communications. A number of separate State Government departments and non-government organisations will have key functional responsibilities for their respective element of infrastructure recovery in a disaster event;
- **Roads and Transport Recovery:**
  Includes the response, recovery and reconstruction of the State's road and transport assets. Department of Transport and Main Roads will respond to the disaster by providing safe access and re-connecting communities;
- **Environmental Recovery:**
  Includes recovery as it relates to parks, waterways and wildlife. Several State Government departments and non-government organisations will have key functional responsibilities for elements of environmental recovery in a disaster event.

Experience has demonstrated that effective recovery management following a disaster depends on planned procedures, trained staff, identified resources and planned distribution processes. The Recovery and Resilience Sub Plan provides the strategic framework for recovery planning, outlining roles and responsibilities of government and non-government partners for the coordinated delivery of recovery services following a disaster.

PART 15. LOCAL DISASTER MANAGEMENT SUB PLANS

Sub Plans have been developed for specific hazards with some or all of the sub plans being implemented depending on the event.

The following sub plans have been developed:

1) Evacuation Sub Plan
2) Recovery and Resilience Sub Plan
3) Communication Sub Plan
4) Coordination Centre Sub Plan
5) Resupply Sub Plan
6) Pandemic Sub Plan
7) State Emergency Service Concept of Operations
8) Evacuation Centre Management SOP
9) Yeppoon Public Cyclone Shelter SOP
10) Livingstone Local Disaster Management Group Operational Plan
11) Bushfire Management Plan
12) Kellys Offstream Storage Emergency Action Plan

PART 16. Annexure List

A LDMG Core Membership Contact List
B LDMG Advisory, Deputy and Other Invitee Contact List
C Hazards Risk Register
D Risk Treatment Plan
E Stages of Activation for Response Arrangements
F Stages of Activation for Recovery Arrangements
G Tsunami Evacuation Maps
H Local Disaster Management Group Forms
I Queensland State Disaster Management Plan
J Livingstone Area Fire Management Group Bushfire Mitigation Plan
K Livingstone LDMG Operational Plan

ANNEXURE C – Hazards Risk Register

The LDMG is committed to building knowledge, capability and capacity within the local area through a hazard identification and risk treatment methodology that includes:

- Effective planning;
- Building a flexible, agile structure;
- Seeking continuous improvement;
- Establishing effective information management systems; and
- Timely actions and distribution of information.

Some of the risk identified will be beyond the capacity of the LDMG to manage. Through this process the DDMG will accept transfer of some risks. This method acknowledges the DDMG commitment to building capacity to treat those risks if and when they arise.

Risks outlined in the Hazards Risk Register are analysed by members of the LDMG with a view to identifying strategies for risk treatment. The allocation of responsibility for the implementation of risk treatment strategies, monitoring and reporting shall be determined by members of the LDMG under the guidance of the LDC. These strategies are contained in the *Risk Treatment Plan - Annexure D*. Along with these strategies the Risk Treatment Plan contains preferred treatment options, responsibilities and timeframes for implementation.

A review of the risk treatment plan shall be conducted in conjunction with any risk assessment review process.

Hazard	Category	Consequence	Likelihood	Risk
Cyclone and East Coast Low	People	Major	Likely	High
	Buildings	Major	Likely	High
	Environment	Major	Likely	High
	Business	Major	Likely	High
	Lifelines	Major	Likely	High
	Critical Facilities	Major	Possible	High
Storm Surge	People	Moderate	Possible	Medium
	Buildings	Major	Possible	High
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Severe Storm	People	Major	Likely	High
	Buildings	Moderate	Possible	Medium
	Environment	Moderate	Possible	Medium
	Business	Moderate	Possible	Medium
	Lifelines	Moderate	Possible	Medium
	Critical Facilities	Moderate	Possible	Medium
Tornado	People	Major	Possible	High
	Buildings	Major	Possible	High
	Environment	Major	Possible	High
	Business	Major	Possible	High

Hazard	Category	Consequence	Likelihood	Risk
Tornado	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Flooding – Local	People	Major	Likely	High
	Buildings	Moderate	Likely	High
	Environment	Minor	Likely	Medium
	Business	Minor	Possible	Low
	Lifelines	Moderate	Likely	High
	Critical Facilities	Moderate	Likely	High
Flooding - Fitzroy River	People	Minor	Likely	Medium
	Buildings	Minor	Likely	Medium
	Environment	Moderate	Likely	High
	Business	Moderate	Likely	High
	Lifelines	Moderate	Likely	High
	Critical Facilities	Moderate	Likely	High
Tsunami	People	Catastrophic	Possible	High
	Buildings	Catastrophic	Possible	High
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Earthquake	People	Moderate	Possible	Medium
	Buildings	Moderate	Possible	Medium
	Environment	Moderate	Possible	Medium
	Business	Moderate	Possible	Medium
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Landslip	People	Minor	Likely	Medium
	Buildings	Minor	Likely	Medium
	Environment	Minor	Likely	Medium
	Business	Minor	Likely	Medium
	Lifelines	Minor	Likely	Medium
	Critical Facilities	Minor	Likely	Medium
Heatwave	People	Moderate	Likely	High
	Buildings	Minor	Possible	Low
	Environment	Minor	Likely	Medium
	Business	Minor	Likely	Medium
	Lifelines	Minor	Likely	Medium
	Critical Facilities	Minor	Likely	Medium
Bushfire	People	Moderate	Almost Certain	High
	Buildings	Moderate	Almost Certain	High
	Environment	Moderate	Almost Certain	High
	Business	Moderate	Likely	High
	Lifelines	Minor	Likely	Medium
	Critical Facilities	Moderate	Likely	High

Table 12: Non-Natural Risk Register

Hazard	Category	Consequence	Likelihood	Risk
Civil Riot	People	Minor	Unlikely	Low
	Buildings	Minor	Unlikely	Low
	Environment	Minor	Unlikely	Low
	Business	Minor	Unlikely	Low
	Lifelines	Minor	Unlikely	Low
	Critical Facilities	Minor	Unlikely	Low
Terrorist Attack	People	Major	Possible	High
	Buildings	Major	Possible	High
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Arson	People	Moderate	Possible	Medium
	Buildings	Moderate	Possible	Medium
	Environment	Moderate	Possible	Medium
	Business	Moderate	Possible	Medium
	Lifelines	Moderate	Possible	Medium
	Critical Facilities	Moderate	Possible	Medium
Major Transport Incident	People	Major	Possible	High
	Buildings	Moderate	Unlikely	Medium
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Rare	Low
Hazardous Material Incident	People	Major	Possible	High
	Buildings	Moderate	Unlikely	Medium
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines	Major	Possible	High
	Critical Facilities	Major	Possible	High
Exotic Disease (Animals and Plants)	People	Major	Likely	High
	Buildings			
	Environment	Major	Likely	High
	Business	Major	Likely	High
	Lifelines			
	Critical Facilities			
Medical Epidemic and Infectious Disease (Including Influenza Pandemic)	People	Catastrophic	Possible	High
	Buildings			
	Environment			
	Business	Catastrophic	Possible	High
	Lifelines			

Hazard	Category	Consequence	Likelihood	Risk
	Critical Facilities	Catastrophic	Possible	High
Marine Oil Spill	People	Minor	Possible	Low
	Buildings			
	Environment	Major	Possible	High
	Business	Major	Possible	High
	Lifelines			
	Critical Facilities	Minor	Possible	Low
Critical Infrastructure Failure	People	Major	Possible	High
	Buildings	Minor	Possible	Low
	Environment	Major	Possible	High
	Business	Moderate	Possible	Medium
	Lifelines	Moderate	Possible	Medium
	Critical Facilities	Moderate	Possible	Medium

ANNEXURE D – Risk Treatment Plan

Plan	Risk Statement	Treatment	Progress
1	Lack of public education and awareness concerning disasters and actions to take in preparation, response and recovery after an event	Public Education and Awareness Activities	Get Ready Week, Resilient Ricky, Hub Tours, Forums and Workshops
2	Communities awareness of 'At Risk' Mapping - All Hazards	Promote 'Disaster Prepared Communities Portal and the Disaster Dashboard '	Progressing - Portal and Dashboard are promoted at all events and mediums
3	Identification/update of places of refuge, safer places and evacuation centres	Identification/Update of Places of Refuge, Safer Places and Evacuation Centres	Progressing
4	Businesses requiring assistance with business continuity planning (BCP) and emergency response planning (ERP) to build their resilience to disasters.	Business Continuity Planning/Emergency Planning Workshops	Economic Recovery Development Officer schedules regular workshops for Business
5	Buildings constructed prior to 1985 were not built according to the building codes following amendments after TC Tracey hit Darwin. Therefore, there is a risk these buildings would be unsafe during a cyclonic event.	Encouragement of home owners to retrofit houses	Queensland government household resilient program targeted at low income earners to make home improvements.
6	Residents may not be aware of what a flood height warning translates to in terms of risk to them and their household.	Reinstate flood indicators	
7	Areas in Livingstone Shire are potentially at risk from a landslide.	Refer to Livingstone Shire Council Planning Scheme 2018	
8	Main road transportation routes are at risk of being blocked and delivery of goods into and out of the Livingstone Shire area would be disrupted.	Alternate transport routes - air and marine	
9	Fitzroy River flooding may impact on homes and buildings and this will put lives and property at risk.	Refer to Livingstone Shire Council Planning Scheme 2018	
10	Communities can face individualised issues during various disasters, including but not limited to isolation due to road closures and failure of services such as telephones.	Community Consultation	Encouragement of communities to identify their vulnerabilities and plan for isolation

Plan	Risk Statement	Treatment	Progress
11	Culturally and Linguistically Diverse (CALD) and other vulnerable residents and visitors in Livingstone Shire may not understand or receive notifications or warnings transmitted before, during and after a disaster.	Liaise with Central Queensland Multi-Cultural Association Inc. and services through LSC Community Centre	
12	Mitigation of risk to essential services and other critical infrastructure is the responsibility of organisations outside of the LDMG's control. The continuation of these services may be stopped or disrupted during an event and result in significantly greater impact to the community.	Coordination of interface between LDMP and service provider plans.	Priority Power Connections document produced with LSC and Energy QLD
13	Primary communication relies on mobiles and the internet however these may fail in an event, e.g. Ex-TC Oswald in January 2013.	Communications Plan	
14	During an event such as heavy rainfall, roads can become unsafe due to flooding. Limit access for motorists. The dangers of crossing a flooded road are well advertised however many people still attempt to cross them putting their lives and their passengers lives at risk.	Community Education and Engagement. Promotion of the Disaster Dashboard	Prepare business case for cameras on high risk flooded roads
15	The coastal areas of Livingstone Shire are at risk of damage from a disaster, including but not limited to, erosion, scarping and pollution. These impacts can result in knock on effects to the residential areas behind them and for the residents that use the beaches for recreational and business purposes.	Implementation of the Coastal Hazards Adaptation Strategy	
16	Disasters can have a large impact on business and private property. Many people are unaware of how to begin in preparing for, withstanding and recovery from an event. Conversely there are groups/businesses in the community willing to provide assistance but are unsure what avenue is available for them to let those in need know.	Community Offers of Assistance through Guardian IMS and Spontaneous Volunteers register with Volunteering QLD	
17	Homes and other properties which have been constructed in high bushfire risk areas may have a Bushfire Management Plan. When property owners on sell the new owners are not aware of the plan and are vulnerable.	Community Education in high-risk areas	High risk areas identified in the Bushfire Risk Mitigation Plan are targeted for engagement and education activities
18	Homes and other properties which have been constructed in high bushfire risk areas may have a Bushfire Management Plan. There is no ongoing compliance activities to ensure the plan is being adhered to.	Advocacy at State level to introduce compliance checks.	
19	Environmental impacts during a disaster can have limited attention and resources allocated due to the priorities of protecting life and property.	Recovery and Resilience Taskforce	Taskforce meets regularly
20	Community is unaware of the purposes and different uses of the Yeppoon Cyclone Shelter, Evacuation Centres and the Hub.	Community Engagement and Education	Resilient Ricky and social media posts during cyclone and storm season to explain the appropriate uses.

Plan	Risk Statement	Treatment	Progress
21	Homelessness can decrease the disaster resilience of individuals and communities.	Increased housing availability.	Working with University of Sydney to identify solutions
22	As a result of NDIS and the ability for people living with a disability to choose their support services, there is a risk that individuals won't have a disaster plan.	Work with Queensland Disability Network	Looking into Disability Inclusive Disaster Resilience emergency preparedness forum.

Residual Risks

Residual risk is possible for every event if it is beyond the capability of the Local group to respond. Such events are to be managed within the Queensland Disaster Management Arrangements and will be via a request for assistance to the Rockhampton District. Some of the events may include:

Hazard	Risk	Consequence	Likelihood	Residual Risk
Tsunami	• There is a risk of injury or death to a large number of people • The need to evacuate large numbers of people in a short timeframe • Loss of critical Infrastructure both Local and State owned • There is a risk that emergency services will have limited capability to respond due to loss of critical infrastructure • Lack of accommodation to support evacuees.	Catastrophic	Unlikely	• Mass evacuation will require early warning to enable enough time to undertake the evacuation, suitable modes of transport and a safer location to establish evacuation centre/s - rapid onset events will provide challenges. A large scale coastal event will cause displacement of the community that will require State support • Loss of essential services and critical infrastructure will require State support
Earthquake	• Large scale earthquakes will cause damage to a high proportion of buildings and severe damage to critical infrastructure. • There is a risk that emergency services will have limited capability to respond due to loss of critical infrastructure • Lack of accommodation to support displaced community	Catastrophic	Unlikely	• A large scale coastal event will cause displacement of the community that will require State support • Loss of essential services and critical infrastructure will require State support • A large scale earthquake will require State support to accommodate displaced community.
Cat 4 and 5 Cyclone on HAT/Storm Surge	• There is a risk of injury or death to large number of people • The need to evacuate large numbers of people in a short timeframe • Loss of critical infrastructure both Local and State owned • There is a risk that emergency services will have limited capability to respond due to loss of critical infrastructure	Catastrophic	Unlikely	A severe Cyclone may bring a storm surge and high rainfall, which may have major impacts that require assistance from District/State.

Hazard	Risk	Consequence	Likelihood	Residual Risk
	• Lack of accommodation to support evacuees			
Terrorist Act	• There is a risk that a terrorist attack on critical infrastructure will be beyond the LDMG capability	Catastrophic	Unlikely	Loss of essential services and critical infrastructure will require State support
Prolonged Events	• There is a risk that an event over 72 hours duration will exhaust the capability of local agencies to manage an event	Moderate	Possible	A prolonged event will be beyond the capability of local entities to manage the event due to number of staff in area.

ANNEXURE E – Stages of Activation - Response Operations

Activation Level	Threat/Trigger	Actions	Communication Method
1. Alert Stage	Upon receipt of a warning or information that an emergency/disaster event may occur, organisations will be alerted to ensure readiness to act if called upon. Following consultation between the LDC and the LDMG Chair the LDMG should be activated to the "Alert Stage" regardless of the event or the identification of a lead agency.	During the "Alert Stage" the LDC will: a) Maintain a watching brief to monitor the situation; b) Ensure the LDCC is in a basic state of readiness; c) Establish contact with the DDC; d) Provide initial advice to relevant stakeholders identified in *Annexure A LDMG Core Membership Contact List* and *Annexure B LDMG Advisory, Deputy and Other Invitee Contact List* e) Provide initial advice to LDCC members f) Identify potential risks of imminent hazard and outline strategies and planning in anticipation of escalation. For example an 'Event Action Plan'. g) Release public advice (via media officer) of any relevant public information and warnings, approved by the LDC; h) Start an operation in Guardian IMS	LDC to contact the DDC and SES Local Controller and warning agency by telephone or otherwise as determined. Identified stakeholders (*Annexure A, B and LDCC*) will receive an email stating "LDMG/LDCC @ Alert Stage". The email will contain non sensitive information about the event. Chairpersons of the Recovery & Resilience Taskforces will receive an email stating "LDMG/LDCC @ Alert Stage". The email will contain non sensitive information about the event. Core and Advisory members of the LDMG are responsible for advising members of their organisations of activation to the 'Alert' Stage.
2. Lean Forward Stage	As the threat or the effects of an emergency/disaster becomes imminent, members of the relevant organisations or sections are placed on "Lean Forward" being ready to deploy resources and respond. The Chairperson LDMG will, in consultation with the LDC, make the decision to activate to the "Lean Forward" Stage. The likelihood of the emergency/disaster event impacting on the Local Government area has increased.	The LDC will: a) Notify the DDC; b) Inform relevant stakeholders of "Lean Forward" stage; c) Ensure the LDCC is fully established & set up ready for operation; d) Maintain minimum staffing level within the LDCC (i.e. LDC or nominated person and Operations Officer), to monitor, record and if necessary establish communications with lead agency to ensure appropriate information flow; e) Seek availability of LDCC staff and prepare rosters;	LDC to contact the DDC and SES Local Controller by telephone or otherwise as determined by the LDC and establish reporting timelines (for instance Situation Reports) Identified stakeholders (*Annexure A & B*) will receive an email stating "LDMG/LDCC –Lean Forward Stage – please acknowledge". All recipients must reply to the email to confirm receipt. Chairpersons of the Recovery & Resilience Taskforces will receive an email stating "LDMG/LDCC –Lean Forward Stage – please acknowledge".

Activation Level	Threat/Trigger	Actions	Communication Method
		f) Release public advice (via media officer) of any relevant public information and warnings, approved by the LDC; g) Commence financial management processes; h) Continue to monitor the situation; i) Consult with the Chairperson LDMG & SES Local Controller regarding future planning and response strategies; j) Call a meeting of the LDMG to brief core members and requested advisory agencies.	All recipients must reply to the email to confirm receipt. Those that are unable to reply to the email will be contacted per listed telephone numbers. Core and Advisory members of the LDMG are responsible for advising members of their committees of activation to the 'Lean Forward' Stage.
3. Stand Up Stage	The Chairperson and the LDC decide to activate to the "Stand Up" Stage to respond to the imminent emergency/disaster event. All required LDMG members are called to respond to fulfil their functions and role. Such roles may be pre-planned or as dictated by the emergency/disaster situation. The 'Alert' and 'Lean Forward' stages may not be possible if the emergency/disaster strikes without warning. In this stage the community will be or already have been impacted. Multi agency response will be coordinated through the LDCC.	The LDC will: a) Maintain contact with the DDC; b) Scale LDCC staffing levels as required; c) Call a LDMG meeting with the lead agency and all LDMG Members; d) Request the relevant Subcommittees to meet, if they have not already done so; e) Continue providing information to the public (via the Media Liaison Officer).	Maintain contact with DDC by telephone or otherwise as determined by the LDC. Advice of the LDMG and LDCC activating to 'Stand Up' stage will be sent as per Activation LDMG sub plan. All members must reply to email to confirm receipt. Guardian IMS may be utilised to steam line notifications and responses. Those that do not reply to the email will be contacted per listed telephone numbers. LDCC operations will be escalated according to the event and requirements to respond. SITREP's will be issued as per DDMG request. The public information team will maintain the flow of notifications and warnings to the public as approved by the LDC.
4. Stand Down Stage	The Chairperson and the LDC in consultation with the lead agency determine at what time the "Stand Down" phase will be initiated to conclude an operation. The 'Stand Down' stage is the point that the response to the emergency/disaster event is	Upon being advised of the conclusion of an operation the LDC will: a) Coordinate recall of participating organisations; b) Notify DDC; c) Ensure completion and collation of all paperwork within LDCC;	Contact with the DDC will be by telephone or otherwise as determined by the LDC. LDMG and LDCC staff members will be sent an email stating "LDMG – Stand Down" and provide details of final

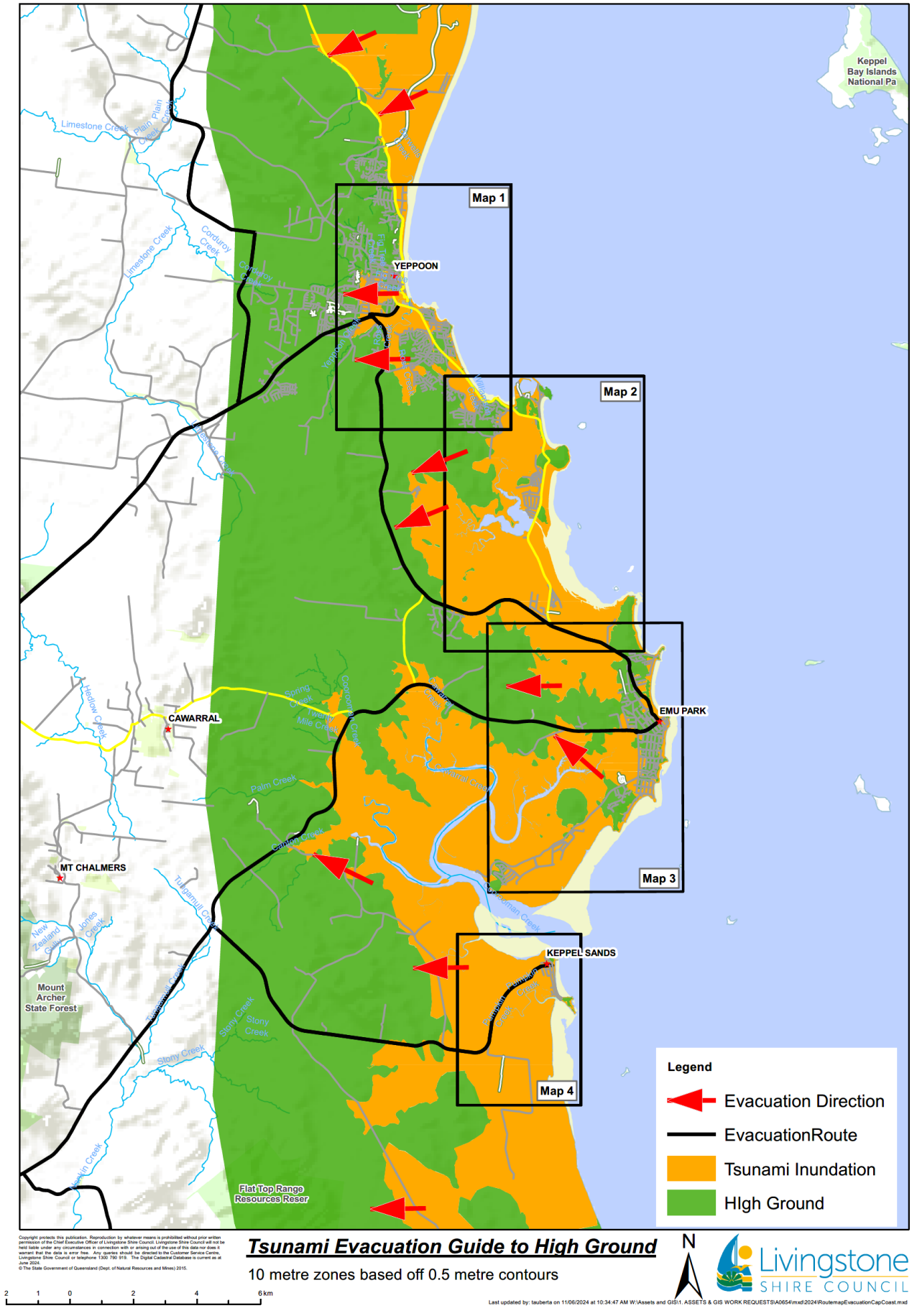
Activation Level	Threat/Trigger	Actions	Communication Method
	completed and the coordination of operations transitions to Recovery.	d) Prepare post operational activities (i.e. debrief and reviews); e) Close LDCC – transition to Recovery.	meeting times and LDCC closure process as per Activation LDMG sub plan. Advice of response operations ceasing will be forwarded to identified stakeholders (*Annexure A & B*) with advice pertaining to required debriefs and post operation reporting.

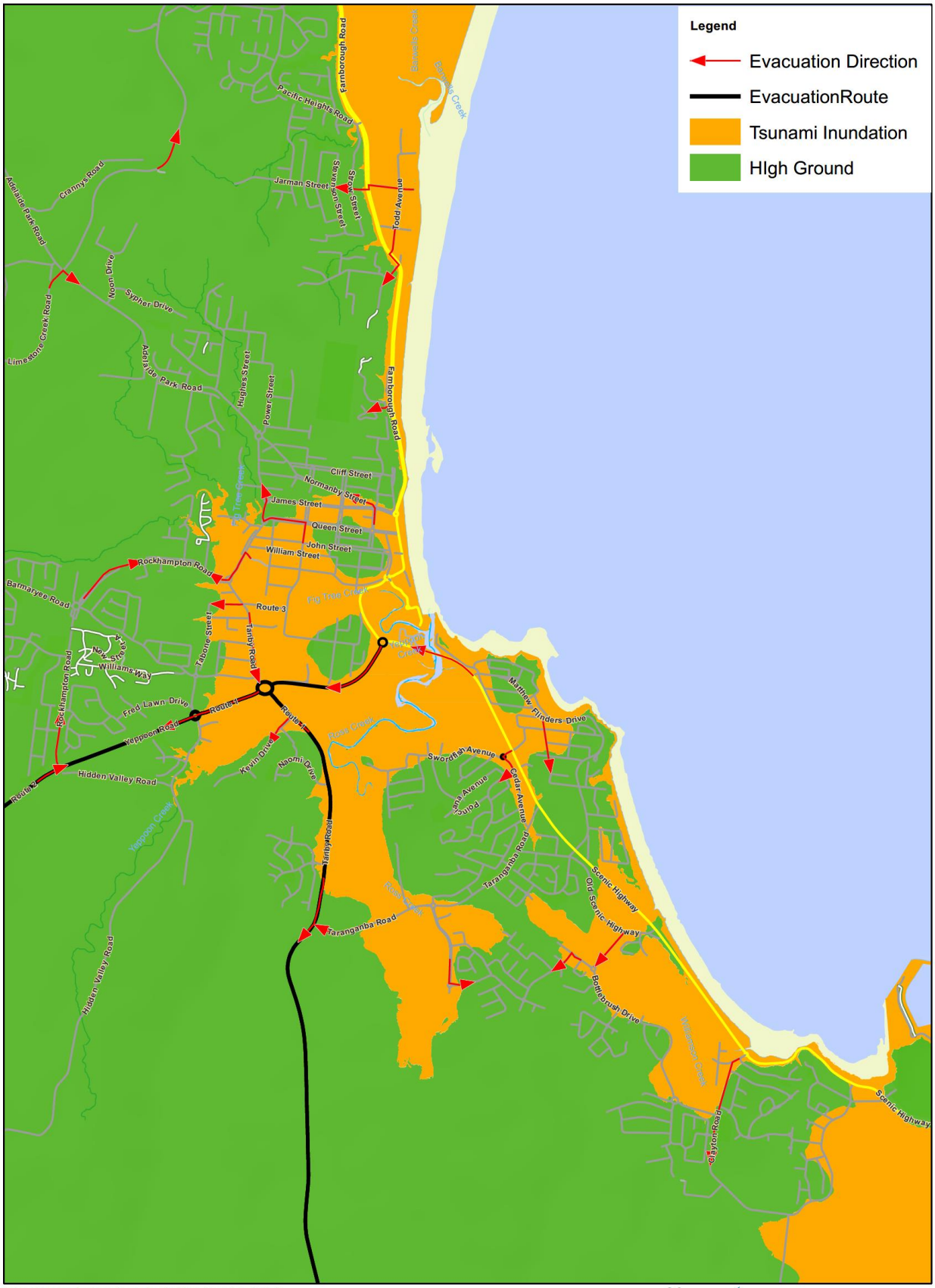
ANNEXURE F – Stages of Activation – Recovery

Levels of activation for recovery compared to those of the response phase.

		Triggers	Actions	Communications
Response Alert	Recovery Alert	• Response phase at 'lean forward' level of activation	• Appointment of LRC as appropriate • Potential actions and risks identified • Information sharing commences • LRC in contact with LDCC/LDC • Initial advice to all recovery stakeholders	• LRC and LRG members on mobile remotely
Response Lean	Recovery Lean Forward	• Response phase at 'stand up' level of activation • Immediate relief arrangements are required during response phase	• Monitoring of response arrangements • Analysis of hazard impact or potential impact • Relief and recovery planning commences • Deployments for immediate relief commenced by recovery functional agencies	• LRC and LRG members on mobile and monitoring email remotely • Ad hoc reporting
Response Stand Up	Recovery Stand Up	• Immediate relief arrangements continue • Response phase moves to 'stand down' level of activation. Medium term recovery commences.	• LRG activated at LDCC or alternate location • Recovery plan activated • Deployments for immediate relief response • Action plans for four functions of recovery activated as required • Community information strategy employed • Participate in response debrief • Transition arrangements from 'response and recovery' to 'recovery' activated including handover from LDC to LRC • Action plans for four functions of recovery continue • Community information strategies continue	• LRC and LRG members present at LDCC or alternate location, on established land lines and/or mobiles, monitoring emails and Guardian IMS situation reports / tasks. • LRC and LRG members involved in medium term recovery continue as required • Regular reporting to LDMG/LDC
Response Stand Down	Recovery Stand Down	• LRG arrangements are finalised. Community returns to normal activities with ongoing support as required.	• Consolidate financial records • Reporting requirements finalised • Participate in recovery debrief • Participate in post event debrief • Post event review and evaluation • Long term recovery arrangements transferred to functional lead agencies • Return to core business	• LRC and LRG members resume standard business and after hours contact arrangements • Functional lead agencies report to LRC/ LRG as required

ANNEXURE G – Tsunami Evacuation Maps




Legend
Evacuation Direction
EvacuationRoute
Tsunami Inundation
HIgh Ground
Farnborough Road
Pacific Heights Road
Jarman Street
Seaview Street
Todd Avenue
Cranny's Road
Adelaide Park Road
Noon Drive
Sypher Drive
Limestone Creek Road
Hughes Street
Power Street
Cliff Street
Normanby Street
James Street
Queen Street
John Street
William Street
Rockhampton Road
Batmaryee Road
Route 3
Tabone Street
Tanby Road
Fig Tree Creek
Williams Way
Fred Lawn Drive
Route 1
Yeppoon Road
Route 2
Hidden Valley Road
Kevin Drive
Naomi Drive
Yeppoon Creek
Rosslyn Creek
Matthew Flinders Drive
Swordfish Avenue
Cedar Avenue
Taranganba Road
Scenic Highway
Old Scenic Highway
Bottlebrush Drive
Clayton Road
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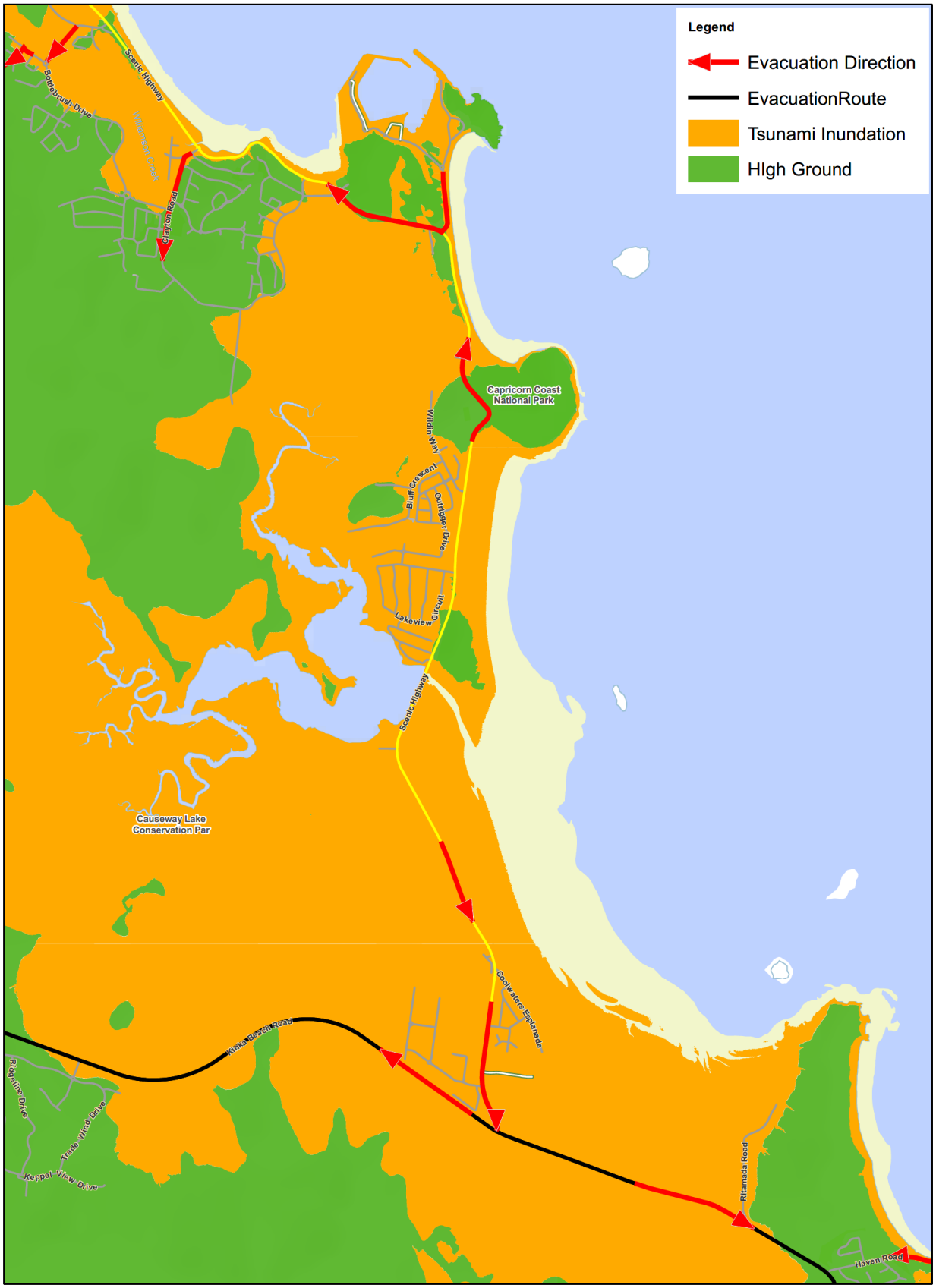
Yeppoon Tsunami Evacuation
0.250.125 0 0.25 0.5 0.75 1 1.25 1.5 1.75 km
N
Livingstone SHIRE COUNCIL
Last updated by: tauberta on 11/06/2024 at 9:44:55 AM W:\Assets and GIS\1. ASSETS & GIS WORK REQUESTS\A0654\mxd\2024\RoutemapEvacuationYeppoon.mxd



Causeway Lake Tsunami Evacuation

0.250.125 0 0.25 0.5 0.75 1 1.25 1.5 1.75 km

N

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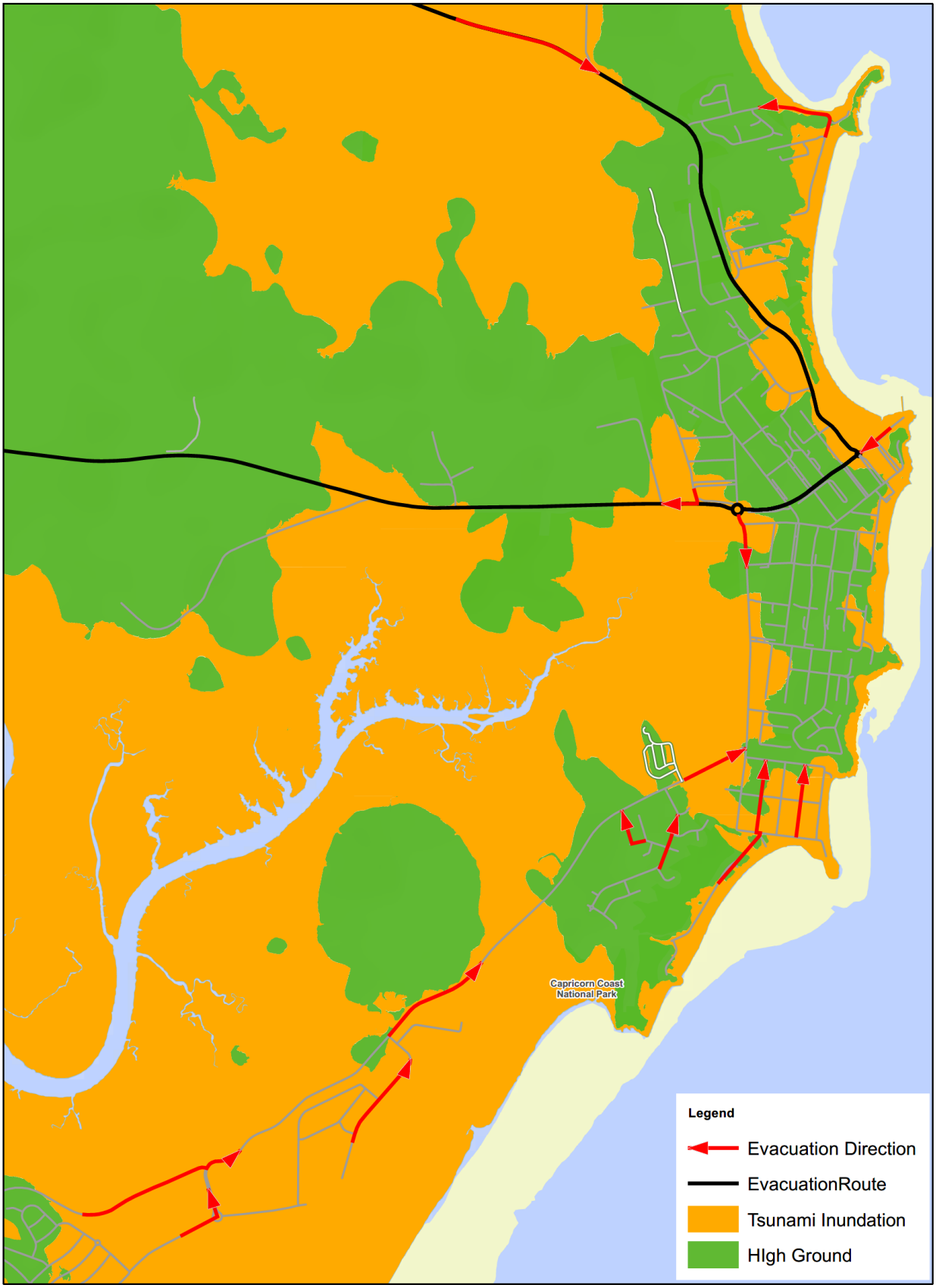

Emu Park Tsunami Evacuation

0.25 0.125 0 0.25 0.5 0.75 1 1.25 km

N

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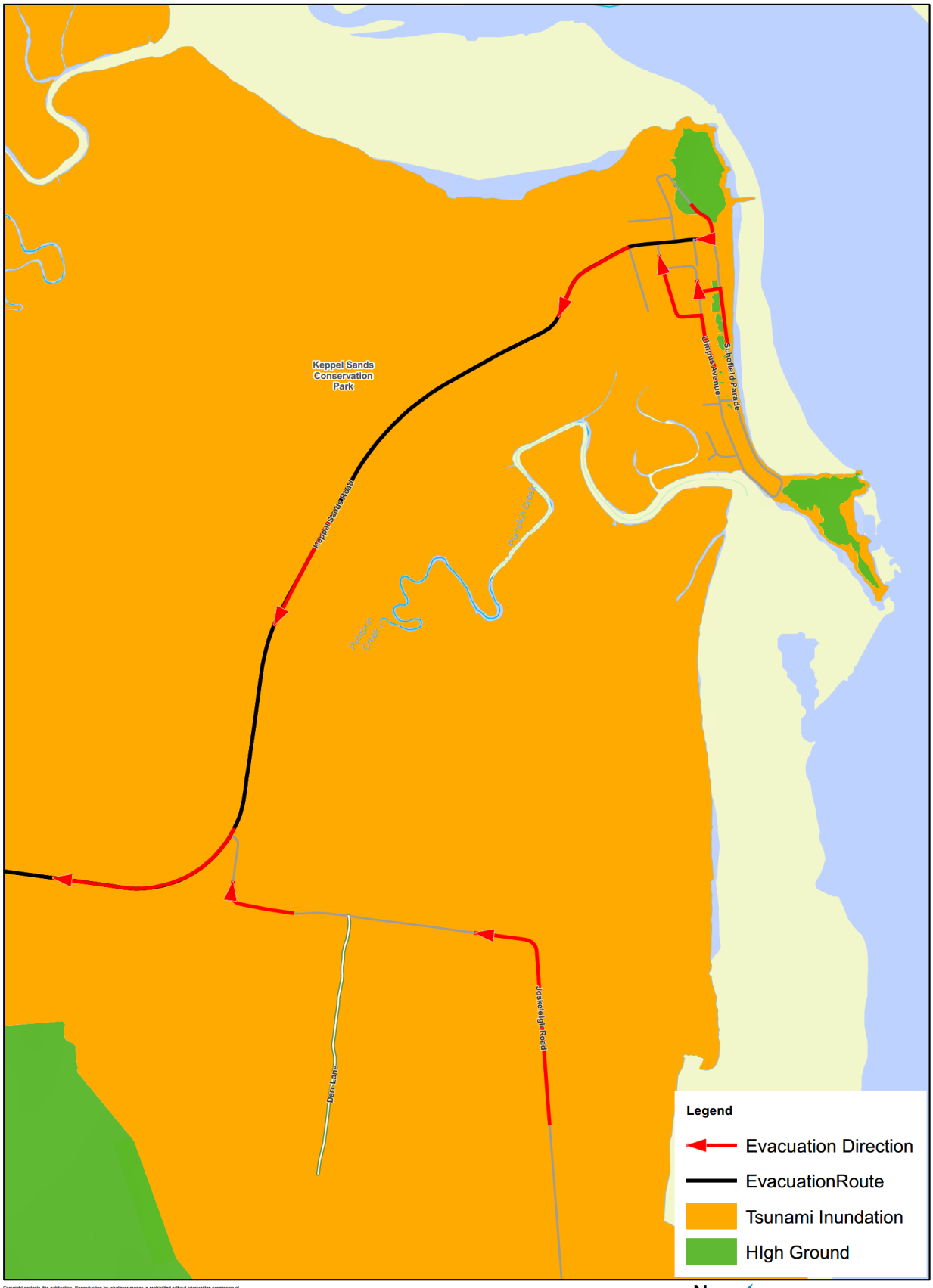

Keppel Sands Tsunami Evacuation

0.25 0.125 0 0.25 0.5 0.75 km

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Livingstone SHIRE COUNCIL

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ANNEXURE H – Local Disaster Management Group Forms

Member Status Report

Livingstone Shire Local Disaster Management Group

Member Status Report

Organisation represented: _____

Meeting Date & Time: _____

The agencies of the Local Disaster Management Group have a shared responsibility of effective disaster management. The Emergency Management Assurance Framework (EMAF) supports accountability and builds consistency across all levels of disaster management arrangements. This framework establishes the Standard for Disaster Management in Queensland (the Standard). The Standard is founded on six (6) shared responsibilities. These responsibilities are reflected in the activities indicated in this Members Status Report

The following activities have been undertaken or are being undertaken by the local government/agency/organisation: *(delete sections or insert N/A as required depending on role and responsibilities)*

Mitigation

May include items such as Studies (NDRP), mitigation initiatives, planning or measures being undertaken, review of hazards and risks.

Hazard Identification and Risk Assessment.

Hazard Mitigation and Risk Reduction

Impediments to Implementation of Mitigation Measures

May include impediments such as funding, resourcing issues, responsibility.

Planning

Preparedness and planning include all activities undertaken prior to an event to mitigate the impact of the event on the community. Planning also occurs in response and recovery phases.

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Emergency Communications

Emergency communications both within and across those agencies, groups and networks responding to and engaging with the wider community is paramount to effective operations.

Response

Disaster response operations are focused on stabilising the impact of a disaster in a community. This includes a range of life, property and environment-saving activities and life-dependant restoration activities. At a system level the effective management of disaster response operations is dependent on the performance of command, control, coordination and cooperation and operational information management systems.

Relief and Recovery

Relief is a transitionary phase that occurs during both response and short-term recovery operations. Relief includes the immediate provision of basic human needs immediately following disaster events. It is heavily focused on reducing and stabilising current impacts to prevent the impact of secondary hazards.

Operational Issues

Readiness Status *(General comment regarding status of operational readiness).*

Staff Availability *(Comment on staff availability for LDCC, response etc.)*

LDCC *(Comment on resourcing levels for LDCC and possible impacts on operations.*

Operations Conducted

Date	Type of event	Brief summary of response activities (Include role and functions)

Remedial Action *(Outline any proposed actions or improvements as a result of the operational activities).*

1.
2.
3.

Capability Development

Training Conducted

Date	DM component or function	Name of course or training content	Conducted by	Participants

Identified Training Needs *(Insert details of any required training including suggested dates etc.)*

Proposed Date	DM component or function	Name of course or training content	Conducted by	Participants

Exercises Conducted

Date	Name of exercise	Type of exercise e.g. tabletop / practical	Objectives of the exercise e.g. test communications plan	Agency coordinating the exercise	Local Govt. / Agencies involved

Remedial Action *(Insert details of any proposed actions or improvements as a result of lessons learned or recommendations).*

1.
2.
3.

Proposed Exercises *(Insert details of any proposed exercises or exercises currently under development, including suggested dates etc.)*

Date	Name of exercise	Type of exercise e.g. tabletop / practical	Objectives of the exercise e.g. test communications plan	Agency coordinating exercise	Local Govt. / Agencies involved

Community Awareness/Engagement/Education

Conducted Community Awareness/Engagement/Education *(Insert details of any community awareness/engagement/education activities conducted).*

Date	Name of Activity	Type of Activity	Objectives of the exercise Activity	Agency coordinating Activity	Local Govt. / Agencies involved

Proposed Community Awareness/Engagement/Education *(Insert details of any proposed community awareness/engagement/education activities proposed or currently under development, including suggested dates etc.)*

Date	Name of Activity	Type of Activity	Objectives of the exercise Activity	Agency coordinating Activity	Local Govt. / Agencies involved

Review of Local Disaster Management Plan

Review Date	Type of Review	Summary of amendments

General Business *(Any other comments).*

Sign-off and Approval

Sign:	
Report submitted by:	
Local Government / Agency Position:	
Date submitted:	

LSC Appointment to LDMG of Core Member

Livingstone Shire **Local Disaster Management Group**

Date

Our reference: ES9.1.1
Enquiries to: Disaster Management and Resilience
Telephone: 07 4913 5000 or 1300 790 919
Email: lscdm@livingstone.qld.gov.au

Insert Name/Position
Organisation
Address

Dear insert name/Position

In accordance with s. 33 of the *Disaster Management Act 2003* and in compliance with s. 9 the *Disaster Management Regulation 2014,* I hereby appoint you/ the (position), organisation as a core member of the Livingstone Shire Local Disaster Management Group representing the insert organisation name.

I am satisfied that you have/the position of _____ has the necessary experience or expertise to perform the functions of a core member of a Local Disaster Management Group.

Should you require any further information, please contact Livingstone Shire Local Disaster Management Group Secretariat on 4913 3626 or LSCDM@livingstone.qld.gov.au

Yours faithfully

Mayor Adam Belot
Chair
Livingstone Shire Local Disaster Management Group

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

LSC Appointment to LDMG of Advisory Member

Livingstone Shire Local Disaster Management Group

Insert date

Our reference: ES9.1.1
Enquiries to: Disaster Management and Resilience
Telephone: 07 4913 5000 or 1300 790 919
Email: lscdm@livingstone.qld.gov.au

Insert name/position
address

Dear insert name

In accordance with s. 33 of the *Disaster Management Act 2003* and in compliance with s. 9 the *Disaster Management Regulation 2014* I hereby appoint you/the (position), (organisation) as an Advisory Member of the Livingstone Shire Local Disaster Management Group representing the insert organisation name.

I am satisfied that you/the (position) have/has the necessary experience or expertise to perform the functions of an advisory member of a Local Disaster Management Group.

Should you require any further information, please contact the Livingstone Shire Local Disaster Management Group Secretariat on 4913 3626 or LSCDM@livingstone.qld.gov.au

Yours faithfully

Mayor Adam Belot
Chair
Livingstone Shire Local Disaster Management Group

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

LSC Appointment to LDMG of Deputy Member

Livingstone Shire **Local Disaster Management Group**

Insert date

Our reference: ES9.1.1
Enquiries to: Disaster Management and Resilience
Telephone: 07 4913 5000 or 1300 790 919
Email: lscdm@livingstone.qld.gov.au

Insert name and address

Dear insert name

In accordance with s. 33 of the *Disaster Management Act 2003* and in compliance with s. 14 the *Disaster Management Regulation 2014* I hereby appoint you/the (position), organisation as a Deputy Member of the Livingstone Shire Local Disaster Management Group representing the insert organisation name.

I am satisfied that you/the (position) have/has the necessary experience or expertise to perform the functions of a member of a Local Disaster Management Group.

Should you require any further information, please contact the Livingstone Shire Local Disaster Management Group Secretariat on 4913 3626 or LSCDM@livingstone.qld.gov.au

Yours faithfully

Mayor Adam Belot
Chair
Livingstone Shire Local Disaster Management Group

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Nomination to LDMG - Letter from Agency to Chair of LDMG

NOTE: Please print onto your organisation letterhead

Date

The Chair
Livingstone Shire Local Disaster Management Group
PO Box 2292
Yeppoon QLD 4703

Dear Sir,

I would like to nominate [delete whichever paragraph is not used]:

(insert nominee name) who holds the position of (insert position) to represent (insert organisation) on the Livingstone Shire Local Disaster Management Group.

OR

(insert nominee position) to represent (insert organisation) on the Livingstone Shire Local Disaster Management Group.

This is a replacement for (insert previous nominee name or position) who was the previous member. (Delete if not applicable)

The nominee person or position has the necessary expertise and / or experience to perform the functions of a Local Disaster Management Group member in accordance with the *Disaster Management Act 2003*, on behalf of (insert organisation).

The contact details for the nominee are:

Telephone:	
Mobile:	
Email:	
Postal Address:	

(Insert nominee name or position) has been informed that personal contact information has been collected in accordance with the *Information Privacy Regulation 2009* for the purposes of disaster management.

Should you require any further information, please contact (insert contact name) on (insert telephone number).

Yours sincerely

(insert name)
(insert position)

Authorisation to appoint a Deputy

Livingstone Shire Local Disaster Management Group

Authorisation to appoint a Deputy to
Livingstone Shire Local Disaster Management Group

SECTION ONE

To be completed by the member requesting appointment of his/her deputy, performing the member's functions on the Livingstone Shire Local Disaster Management Group (LDMG). The request is to be approved by the Chairperson of the LDMG.

LDMG MEMBER TO COMPLETE

I _____(Name / Position) _____

_____(Agency/Organisation _____ am a member of the Livingstone Shire LDMG.

In accordance with the *Disaster Management Act 2003* approval is sought from the Chairperson of the Livingstone Shire Local Disaster Management Group to appoint the following person/position as my deputy to attend group meetings in my absence and exercise my functions and powers under *s(14) Disaster Management Regulation 2014* at such meetings.

I am satisfied that this person/position has the necessary expertise or experience to act as my deputy to the Local Disaster Management Group.

The details for the Deputy are:

Name/Position:	
Telephone:	
Mobile:	
Email:	
Postal Address:	
Condition of the authorisation (if applicable): (Note 1)	

Please complete the applicable:

a) The above person/position is replacing _____ who was the previous Deputy member.

b) The above person/position is in addition to _____ who is the existing Deputy member.

c) The above person/position is authorised to carry out all the roles and responsibilities for my position from the following date:

____ / ____ /_____ to the following date ____ / ____ / _____

Signature: _____ **Date:** ____ / ____ / _____

Return this form to: Livingstone Shire Local Disaster Management Group
PO Box 2292
YEPPOON QLD 4703
Or - LSCDM@livingstone.qld.gov.au

SECTION TWO

CHAIRPERSON TO COMPLETE

The authorisation to appoint the person/position named above as the member's deputy is approved.

Signature: _____ Print Name: _____

Date: ____ / ____ / _____

Guidelines for completing an authorisation to appoint a deputy

General
In accordance with the Disaster Management Act 2003 (DM Act) a member of the Local Disaster Management Group may, with the approval of the chairperson, appoint by signed notice another person as his or her deputy. The deputy may attend a group meeting in the member's absence and exercise the member's functions and powers under the DM Act at the meeting. The deputy attending a group meeting is to be counted in deciding if there is a quorum for the meeting.

The chairperson of the group may authorise the nominated person/s as the member's deputy if satisfied on reasonable grounds that the member's deputy has the necessary expertise or experience to perform the functions of the member.

The authorisation may be given on conditions and must be given in writing.

Note 1
You may place conditions on the authorisation.
e.g. the appointment may only be exercised when the member or the first nominated deputy is unavailable.

LDMG Members - Letter Invitation to nominate a representative

Livingstone Shire Local Disaster Management Group

Date

Name
Organisation
Address 1
Address 2

Dear XXXX

The Livingstone Shire Local Disaster Management Group (LDMG) would like your nomination as a representative to be a Core/Advisory Member of the group. As a Core/Advisory Member, your relevant experience or expertise will assist in carrying out the functions detailed in the *Disaster Management Act 2003*, s30.

A template for nomination is included with this letter and also a form for the nomination of a Deputy. The nomination of a Deputy is necessary should the primary representative be unavailable. The Deputy is required to attend meetings and has equivalent expertise and/or experience to the primary representative to enable them to support the LDMG as per normal arrangements.

Some agencies have indicated a preference to nominate a position from their organisation rather than a person (for example officer in charge rather than an individual). This nomination preference is to alleviate absences when a member is on leave or acting in another position. Please consider if the nomination of a position from your agency is appropriate, keeping in mind the contact phone and email you supply will be utilised by the LDMG as a point of contact. The position incumbent would have the equivalent expertise and/or experience to enable them to support the LDMG as per normal arrangements (s33 of the Disaster Management Act 2003).

Please complete both the template and the form and return by close of business DATE (14 days). This can be returned either by post or electronic mail to the contacts below.

Should you require any further information, please contact Sara Sale, Secretariat, Livingstone Shire LDMG on 4913 3709 or LSCDM@livingstone.qld.gov.au

Yours faithfully

Mayor Adam Belot
Chair
Livingstone Shire Local Disaster Management Group

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Correspondence Register

CORRESPONDENCE REGISTER						
Correspondence Date	Inwards/Outwards	Correspondence Type	Name	Agency	Content of Correspondence	Comments

LDMG Meeting Minutes Template

LIVINGSTONE SHIRE LOCAL DISASTER MANAGEMENT GROUP

MINUTES

Meeting Notice

The next Livingstone Shire Local Disaster Management Group meeting was be held at the Centre of Excellence for Disaster Management, Innovation and Community Resilience (The Hub) at Level 2, 7 – 9 James Street, Yeppoon QLD 4703) on Wednesday XX XXXX XXXX and commenced at 0900hrs.

Invitees

Core:

Advisers:

Deputy:

Other Invitees:

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Mayor Adam Belot

Chair, Livingstone Shire Local Disaster Management Group

Items for Discussion

Item 1 - Leave of Absence and Apologies

As of XX XXXX XXXX leave of absences have been received from XXXX.

Update to membership:

Item 2 - Confirmation of Meeting Minutes

Confirmation of minutes of the Livingstone Shire Local Disaster Management Group meeting held on XX XXXX XXXX.

(Attachment 1 – Livingstone Shire Local Disaster Management Group Meeting Minutes - XX XXXX XXXX)

Recommendation:

That the minutes of Livingstone Shire Local Disaster Management Group meeting held on XX XXXX XXXX be confirmed.

Item 3 – Actions from previous meetings

MONTH YEAR

Item	Action	Responsible Person	Details	Status
				Ongoing
				Completed
				Ongoing
				Completed

MONTH YEAR

Item	Action	Responsible Person	Details	Status
				Completed
				Completed

Livingstone Shire Local Disaster Management Group

Item 4 – Correspondence In/Out

Details: Please see below list of correspondence during this quarter:

In	Out

Responsible Officer: XXXX XXXX; Secretariat Local Disaster Management Group – Livingstone Shire Council

Recommendation: For member's information

Item 5 – Recovery and Resilience Taskforce Update

Details: An update will be provided on the four Recovery and Resilience taskforces - Built Environment, Environment and Regulatory, Community Development and Regional and Economic Development.

Responsible Officer: XXXX ; Local Disaster Coordinator – Livingstone Shire Council

Recommendation: For member's information

Item 6 – Operational Plan Update

Details: First Quarter Progression of the LDMG Operational Plan 2022/2023. The Livingstone Shire LDMG Operational Plan outlines the strategic direction of the group for a 12-month period. It sets out the LDMG's goals, strategies and performance indicators for each of those goals for 2022 – 2023. The operational plan will also ensure the LDMG meets its legislative requirements under the Disaster Management Act 2003.

(Attachment 2 – 2022 – 2023 Livingstone Local Disaster Management Group Operational Plan – Version 1.0)

Responsible Officer: Name; Position - Agency

Recommendation: For member's endorsement

Item 7 –

Details:

Responsible Officer: Name; Position - Agency

Recommendation: For member's endorsement

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Livingstone Shire Local Disaster Management Group

Item 13 – Agency Updates

Thank you to xxxxxxx that sent in their member status reports in

(Attachment 3: Livingstone Shire LDMG Member Shared Responsibility Status Update)
Responsible Officer: All agencies

Recommendation: For member's information

Item 14 – General Business

Any items of General Business required to be brought to the Groups attention or for information.

Item 15 – Next Meeting

The next meeting of the Livingstone Shire Local Disaster Management Group has been scheduled for Wednesday, XX XXXX XX commencing at 0900hrs at the Centre of Excellence for Disaster Management, Innovation and Community Resilience (The Hub) at Level 2, 7 - 9 James Street, Yeppoon.

Item 16 – Meeting Closure

Meeting Closed XXXXhrs.

LDMG Meeting Agenda Template

LIVINGSTONE SHIRE LOCAL DISASTER MANAGEMENT GROUP

AGENDA

Meeting Notice

The next Livingstone Shire Local Disaster Management Group meeting will be held at the Centre of Excellence for Disaster Management, Innovation and Community Resilience (The Hub) at Level 2, 7 – 9 James Street, Yeppoon QLD 4703) on Wednesday XX XXXX XXXX commencing at 0900hrs.

Invitees

Core:

Advisers:

Deputy:

Other Invitees:

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665

Mayor Adam Belot

Chair, Livingstone Shire Local Disaster Management Group

Items for Discussion

Item 1 - Leave of Absence and Apologies

As of XX XXXX XXXX leave of absences have been received from XXXX.

Update to membership:

Item 2 - Confirmation of Meeting Minutes

Confirmation of minutes of the Livingstone Shire Local Disaster Management Group meeting held on XX XXXX XXXX.

(Attachment 1 – Livingstone Shire Local Disaster Management Group Meeting Minutes - XX XXXX XXXX)

Recommendation:

That the minutes of Livingstone Shire Local Disaster Management Group meeting held on XX XXXX XXXX be confirmed.

Item 3 – Actions from previous meetings

MONTH YEAR

Item	Action	Responsible Person	Details	Status
				Ongoing
				Completed
				Ongoing
				Completed

MONTH YEAR

Item	Action	Responsible Person	Details	Status
				Completed
				Completed

Livingstone Shire Local Disaster Management Group

Item 4 – Correspondence In/Out

Details: Please see below list of correspondence during this quarter:

In	Out

Responsible Officer: XXXX XXXX; Secretariat Local Disaster Management Group – Livingstone Shire Council

Recommendation: For member's information

Item 5 – Recovery and Resilience Taskforce Update

Details: An update will be provided on the four Recovery and Resilience taskforces - Built Environment, Environment and Regulatory, Community Development and Regional and Economic Development.

Responsible Officer: XXXX ; Local Disaster Coordinator – Livingstone Shire Council

Recommendation: For member's information

Item 6 – Operational Plan Update

Details: First Quarter Progression of the LDMG Operational Plan 2022/2023. The Livingstone Shire LDMG Operational Plan outlines the strategic direction of the group for a 12-month period. It sets out the LDMG's goals, strategies and performance indicators for each of those goals for 2022 – 2023. The operational plan will also ensure the LDMG meets its legislative requirements under the Disaster Management Act 2003.

(Attachment 2 – 2022 – 2023 Livingstone Local Disaster Management Group Operational Plan – Version 1.0)

Responsible Officer: Name; Position - Agency

Recommendation: For member's endorsement

Item 7 –

Details:

Responsible Officer: Name; Position - Agency

Recommendation: For member's endorsement

Livingstone Shire Local Disaster Management Group

Item 13 – Agency Updates

Details: Each agency is requested to provide an update to the group on current and upcoming activities prior to commencement of the meeting. This report can be emailed to LSCDM@livingstone.qld.gov.au by Wednesday XX XXXX XX.

(Attachment 3: Livingstone Shire LDMG Member Shared Responsibility Status Update)
Responsible Officer: All agencies

Item 14 – General Business

Any items of General Business required to be brought to the Groups attention or for information.

Item 15 – Next Meeting

The next meeting of the Livingstone Shire Local Disaster Management Group has been scheduled for Wednesday, XX XXXX XX commencing at 0900hrs at the Centre of Excellence for Disaster Management, Innovation and Community Resilience (The Hub) at Level 2, 7 - 9 James Street, Yeppoon.

Flying Minute Template

Livingstone Shire Local Disaster Management Group

Livingstone Shire Local Disaster Management Group
Flying Minute/s for Member Endorsement
weekday, day month year

Agenda No. & Title	Resolution	Action Officer	Endorsed (√)	Not Endorsed (X)
Example: Agenda Item 1: 2010 Meeting Dates	1. That Members endorse the 2010 DDMG Meeting Dates and make a commitment to attend future meetings.	All Members		☐
Agenda Item 2: <Insert Title>	<Insert what the required outcome is>	<Insert who the action officer is>		☐
Agenda Item 3: <Insert Title>	<Insert what the required outcome is>	<Insert who the action officer is>		☐
Agenda Item 4: <Insert Title>	<Insert what the required outcome is>	<Insert who the action officer is>		☐

LDMG MEMBER ENDORSEMENT
(NB – must be endorsed by appointed Member to achieve quorum and validate resolution)

Signature: _____ Name: xxx

Date: weekday, day month year Agency: xxxx

LDMG Record of Attendance

Livingstone Shire Local Disaster Management Group

Progressive Record of Attendance

2019

		xxxx		xxxx		xxxx		xxxx	
Name	**Agency – CORE**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**
	Quorum Achieved? (Yes/No)								

		xxxx		xxxx		xxxx		xxxx	
Name	**Agency – ADVISORY**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**

		xxxx		xxxx		xxxx		xxxx	
Name	**Agency – DEPUTY**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**

		xxxx		xxxx		xxxx		xxxx	
Name	**Agency – OTHER INVITEES**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**	**Invited**	**Attended**

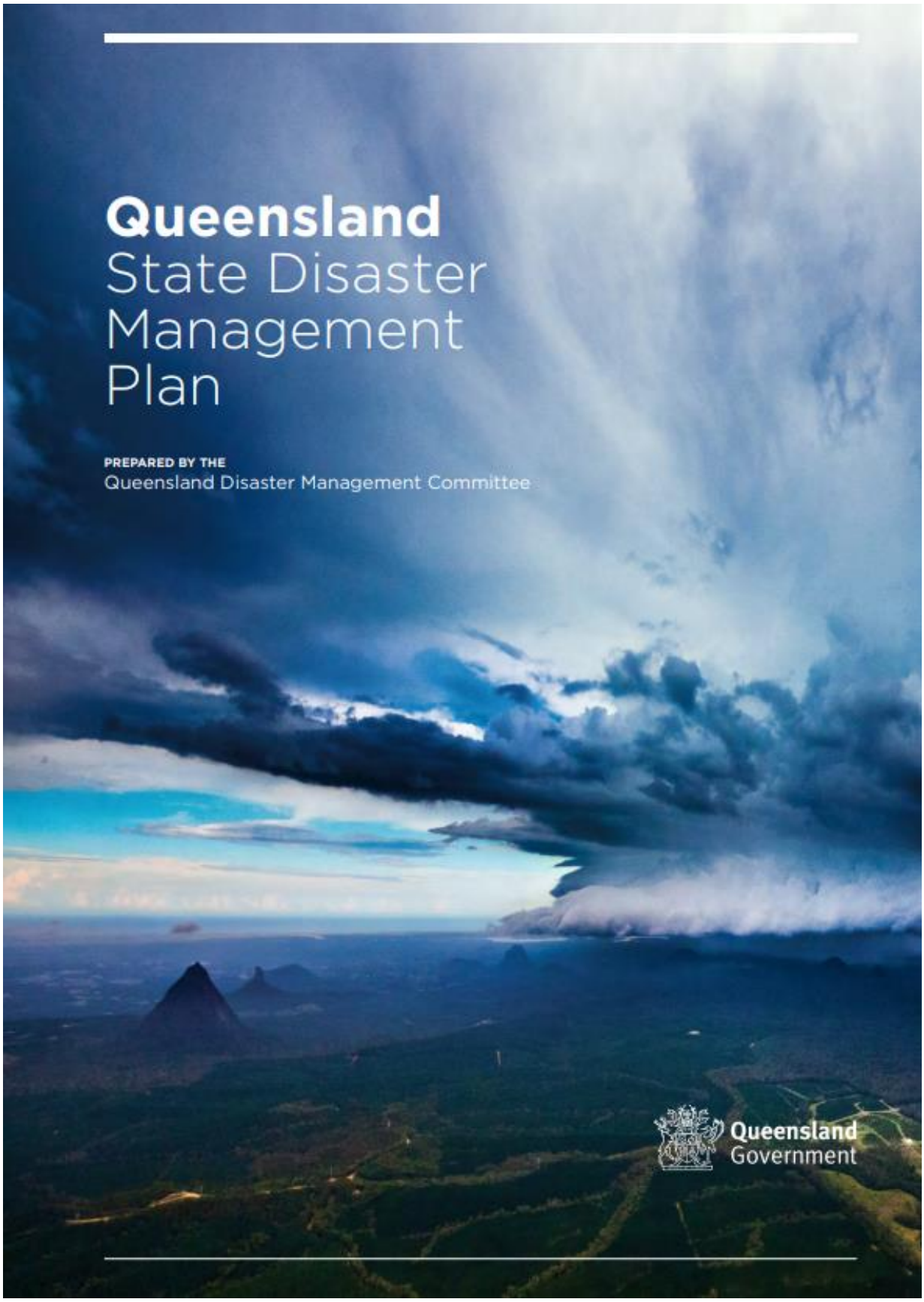
Resolutions Register

Livingstone Shire Local Disaster Management Group - RESOLUTIONS REGISTER							
Meeting Date	**Item No.**	**Resolution/Recommendation**	**Moved**	**Agency**	**Seconded**	**Agency**	**Comments**

Actions Register

Livingstone Shire Local Disaster Management Group - ACTIONS REGISTER					
Meeting Date	No.	Action	Who	Comment	Complete

ANNEXURE I – State Disaster Management Plan



ANNEXURE J – Livingstone Area Fire Management Group Bushfire Mitigation Plan

Livingstone Shire
Area Fire Management Group

Livingstone Council/Shire
Operation Sesbania
BUSHFIRE RISK MITIGATION PLAN

1st January 2024 to 1st January 2025

Version 1.2

ANNEXURE K – Livingstone Shire Local Disaster Management Group Operational Plan

Operational Plan

Livingstone Shire Local Disaster Management Group

2024 - 2025

Annexure to the Livingstone Shire Local Disaster Management Plan

Version 1.0

PO Box 2292, Yeppoon QLD 4703
E: LSCDM@livingstone.qld.gov.au | **P:** 07 4913 3665